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A Systematic Study on the Marine Hydroids in Korea
9. The Family Sertulariidae

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韓國海産 히드라蟲類의 系統分類學的 研究
9. 테히드라科

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摘　　要

韓國 海産 히드라蟲類의 系統分類學的 研究의 一環으로서 1965年부터 1984年까지 우리 나라의 三面沿岸과 島嶼地方(60個 地域)에서 採集된 테히드라類의 標本을 同定 分類하였고 아울러 分布도 考察하였다. 그 結果 2亞科 10屬 40種이 밝혀졌으며 이 中에서 21種은 韓國未記錄種으로 判明되었다. 가로테히드라(*Sertularella miurensis*)가 가장 흔한 種으로서 우리나라의 全海域에 널리 分布되어 있었고 40種中 24種이 日本海域과 共有되어 있었다.

테히드라類의 群集係數에 根據한 우리나라의 두 海域間의 聯關은 南海와 黃海 사이가 가장 높았고 南海와 東海 사이가 그 다음이며 東海와 黃海 사이는 가장 낮은 것으로 나타났다.

Key words: Systematic, Hydroids, Korea, Sertulariidae

CONTENTS

INTRODUCTION

The family Sertulariidae(Hydrozoa, Hydroida) is the largest taxon among the Korean hydroids regarding the number of species identified and the frequency which they were collected.

They grow on the surface of various kinds of organisms such as algae, sponges, some other hydroids, gorgonians, mollusks, crustaceans, ascidians and other inorganic matters during the polypoid generation.

Important systematic works on this family have been done for the regions of Europe, America, South Africa, New Zealand and Japan (Hincks, 1868; Allman, 1874; 1888; Nutting, 1904; Stechow, 1923b; Fraser, 1944; Yamada, 1959; Ralph 1961; Millard, 1964; Vervoort, 1972). Hincks(1868) divided the Sertulariidae into five genera: *Sertularella, Diphasia, Sertularia, Hydrallmania* and *Thuiaria.*

Fig. 1. A map showing localities where the specimens identified were collected.

A. Kang-wŏn-do(江原道)
1. Aninjin(安仁津) 2. Kŭndŏkhaesuyokchang(近德海水浴場)

B. Kyŏngsangbuk-do(慶尙北道)
3. Todong(道洞) 4. Ćhuksan(丑山) 5. Ṕohang(浦項) 6. Kuryongpo(九龍浦)

C. Kyŏngsangnam-do(慶尙南道)
7. Haeundae(海雲臺) 8. Miṕo(尾浦) 9. Pusan(釜山) 10. Oryukto(五六島)
11. Changsŭngṕo(長承浦) 12. Kujora(舊助羅) 13. Hongdo(鴻島)
14. Pijindo(比珍島) 15. Yŏ́nhwado(蓮花島) 16. Ćhŏngsa(靑沙)
17. Yokchido(欲知島) 18. Shinsudo(新水島) 19. Samćhŏnṕo(三千浦)
20. Nŭkto(勒島) 21. Mijodo(彌助島) 22. Mijo-ri(彌助里)
23. Sangju-ri(尙州里) 24. Mokto(木島) 25. Kaldo(葛島)

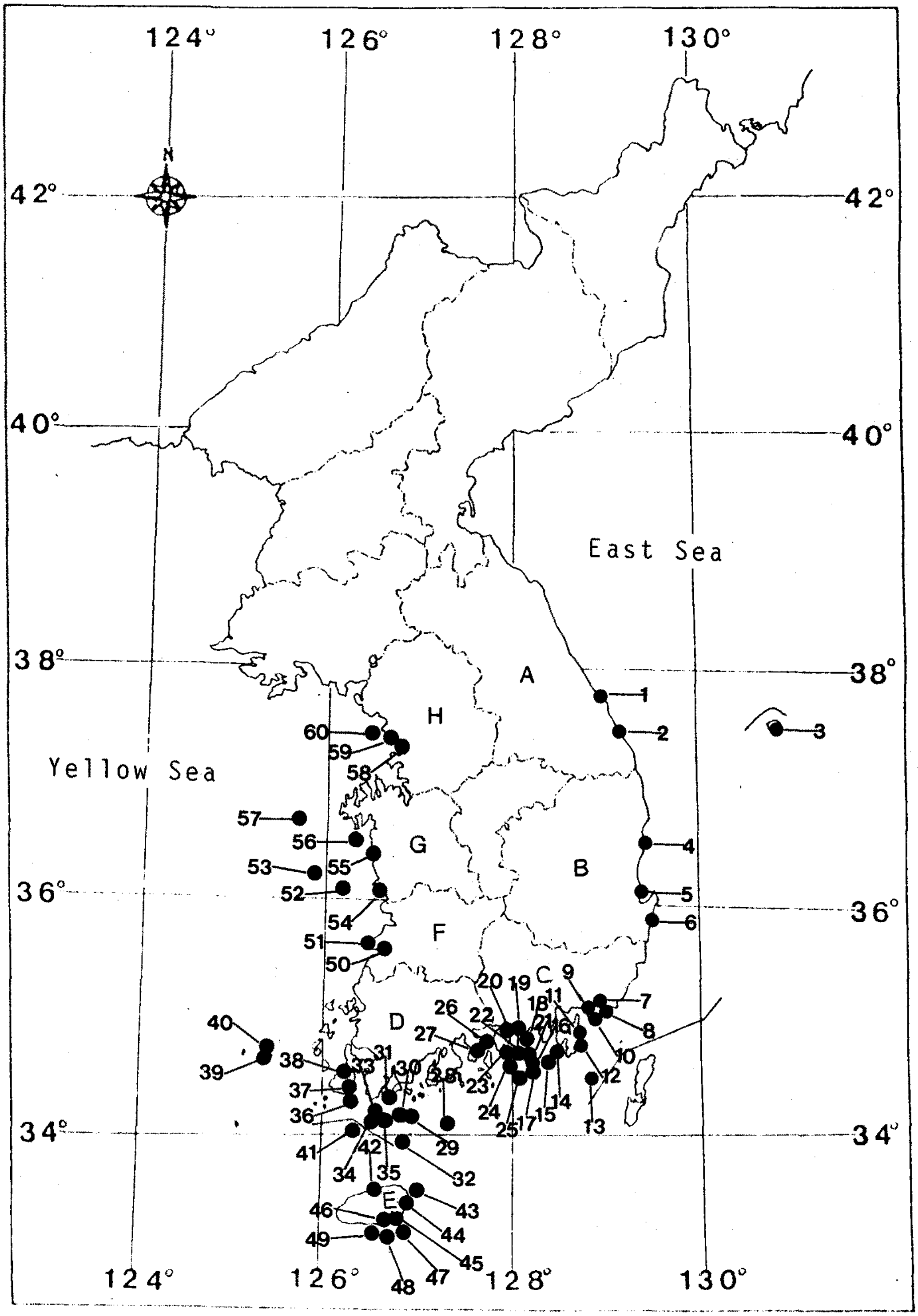
D. Chŏllanam-do(全羅南道)
26. Pangjukṕo(防竹浦) 27. Yŏsu(麗水) 28. Kŏmundo(巨文島)
29. Shinhŭng-ri(新興里) 30. Toćhŏng-ri(道淸里) 31. Wando(莞島)
32. Yŏsŏdo(麗瑞島) 33. Nóhwado(盧化島) 34. Yesong-ri(禮松里)
35. Yejakto(禮作島) 36. Chŏpto(接島) 37. Hoedong(回洞)
38. Nokchin(鹿津) 39. Taehŭksando(大黑山島) 40. Taedundo(大芚島)

E. Cheju-do(濟州道)
41. Hoenggando(橫干島) 42. Chejuhang(濟州港) 43. Udo(牛島)
44. Sŏngsanṕo(城山浦) 45. Pomong-ri(甫木里) 46. Sŏgwiṕo(西歸浦)
47. Supto(森島) 48. Mundo(蚊島) 49. Pŏmdo(虎島)

F. Chollabuk-do(全羅北道)
50. Komso(곰소) 51. Kyŏkṕo-ri(格浦里) 52. Yŏndo(煙島)
53. Ŏćhŏngdo(於淸島)

G. Ćhungćhŏngnam-do(忠淸南道)
54. Piin(庇仁) 55. Taećhŏnhaesuyokchang(大川海水浴場)
56. Anmyŏndo(安眠島) 57. Kyŏng-yŏlbiyŏldo(格列飛列島)

H. Kyŏnggi-do(京畿道)
58. Sorae(蘇萊) 59. Songdo(松島) 60. Chakyaḱto(芍藥島)



For legend, see opposite page.

His system is still retained by recent workers. Allman(1874) defined *Desmoscyphus, Synthecium, Selaginopsis* and *Pericladium.* He seperated *Thuiaria* from Sertulariidae and placed it in the new family Thuiariidae. But in the work of European hydroids, Allman(1888) again placed the *Thuiaria* in Sertulariidae and added three new genera *Hypopyxis, Staurotheca* and *Dictyocladium* to the family. Nutting(1904) divided the Sertulariidae into 12 genera in the "Systematic study of American Sertulariidae". Stechow(1923b) divided that family into three subfamilies, Thyroscyphus, Sertomminae and Sertulariinae, based on the presence or absence of blind sac and hydrothecal pedicel. He also considered the number of opercula, longitudinal rows and teeth of hydrothecae and the position of hydrotheca as important characters.

On the Korean Sertulariidae, Kamita & Sato(1941) preliminarily reported only one species, *Amphisbetia pacifica* Stechow, 1931, in their check list on "Marine fauna at Jinsen(Inchon) Bay". Rho(1967, 1969, 1974) gave a brief descriptions and figures of 10 species belonging to the Sertulariidae. Three unknown species in Korean waters were also reported by Rho & Chang in 1972. Rho & Park(1980, 1983) have recently added six species to this family.

This work is the continuation of a systematic study on the marine hydroids in Korea. A large number of specimens were collected from various localities (Fig. 1) of Korean waters during 1965-1984. The larger specimens were sampled from the depths of 10-100m with fishing net and others collected from the coasts during low tide. They were preserved in about five percent formalin after narcotization with menthol.

For identification the specimens were stained with borax-carmine solution and mounted on the slide glass. The examinations were focused on the follwoing characters: The position and type of hydrotheca, the number of longitudinal rows, teeth and opercula of hydrothecae, the dividing pattern of internode, the presence or absence of blind sac and morphology of gonotheca. The size of each portion of colony was measured with micrometer. The systematic schemes of the Sertulariidae by Nutting(1904) and Stechow(1923b) were refered to for the Korean Sertulariidae.

LIST OF SPECIES

Phylum Cnidaria 자포동물 문
Class Hydrozoa 히드라충 강
Order Hydroida 히드라충 목

Suborder Thecata Fleming, 1828 컵히드라충 아목
Family Sertulariidae Hincks, 1920 테히드라 과
Subfamily Sertomminae Stechow, 1920 눈테히드라 아과(신칭)

Genus 1. *Diphasia* L. Agassiz, 1862 넓은잎히드라 속

1. *Diphasia palmata* Nutting, 1906 넓은잎히드라

Genus 2. *Dynamena* Lamouroux, 1812 민테히드라 속

2. *Dynamena crisioides* Lamouroux, 1824 민테히드라
3. **Dynamena cornicina* McCrady, 1858 나팔민테히드라(신칭)

Genus 3. *Pasythea* Lamouroux, 1812 층쌍컵히드라 속

4. *Pasythea nodosa* Hargitt, 1908 층쌍컵히드라

Subfamily Sertulariinae Stechow, 1920 테히드라 아과(신칭)

Genus 4. *Symplectoscyphus* Marktanner-Turneretscher, 1890 호자와테히드라 속

5. *Symplectoscyphus hozawai* Stechow, 1931 호자와테히드라

Genus 5. *Sertularella* Gray, 1848 테히드라 속

6. **Sertularella distans* (Allman, 1877) 분리테히드라(신칭)
7. **Sertularella tongensis* Stechow, 1919 통테히드라(신칭)
8. *Sertularella levigata* Stechow, 1931 테히드라
9. *Sertularella robusta* Coughtrey. 1876 붉은테히드라
10. *Sertularella solidula* Bale, 1882 단단테히드라
11. *Sertularella quinquelaminata* Stechow, 1931 오컵테히드라
12. *Sertularella lagenoides* Stechow, 1919 플라스크테히드라
13. **Sertularella obtusa* Stechow, 1931 무딘테히드라(신칭)
14. *Sertularella miurensis* Stechow, 1921 가로테히드라
15. **Sertularella tenella* Alder, 1856 연테히드라(신칭)
16. *Sertularella sinensis* Jäderholm, 1896 그물테히드라
17. *Sertularella gotoi* Stechow, 1913 고또테히드라
18. **Sertularella pedrensis* Torrey, 1904 자루테히드라(신칭)
19. **Sertularella gayi* Lamouroux, 1827 가이테히드라(신칭)

Genus 6. *Abietinaria* Kirchenpauer, 1884 나무테히드라 속(신칭)

20. **Abietinaria traski* Torrey, 1902 나무테히드라(신칭)

Genus 7. *Amphisbetia* L. Agassiz, 1862 태평양테히드라 속

21. *Amphisbetia pacifica* Stechow, 1931 태평양테히드라

Genus 8. *Sertularia* Linnaeus, 1758 화관테히드라 속

22. **Sertularia desmoides* Torrey, 1902 사슬화관히드라
23. *Sertularia distans* (Lamouroux, 1816) 화관히드라
24. *Sertularia dalmasi* (Versluys, 1899) 달마스화관히드라
25. *Sertularia hattorii* Leloup, 1940 하또리화관히드라
26. *Sertularia densa* Stechow, 1919 빽빽화관히드라
27. **Sertularia turbinata* (Lamouroux, 1816) 원뿔화관히드라(신칭)

Genus 9. *Thuiaria* Fleming, 1828 깃테히드라 속

28. **Thuiaria suensoni* Levinsen, 1912 수엔손테히드라(신칭)
29. **Thuiaria plumosa* Clark, 1876 깃테히드라(신칭)
30. **Thuiaria thuja* (Linnaeus, 1758) 두자테히드라(신칭)
31. **Thuiaria argentea* (Linnaeus, 1758) 아르헨틴테히드라
32. **Thuiaria nuttingi* Levinsen, 1912 누팅테히드라(신칭)

The asterisks(*) indicate the sertularian species which were newly recorded in Korean waters.

33. **Thuiaria similis* (Clark, 1876) 의테히드라(신칭)
34. **Thuiaria articulata* (Pallas, 1766) 관절테히드라(신칭)
35. **Thuiaria carica* Levinsen, 1892 사초테히드라(신칭)
36. *Thuiaria cupressina* Linne, 1892 검정테히드라

Genus 10. *Selaginopsis* Allman, 1876 곤봉테히드라 속(신칭)

37. **Selaginopsis triserialis* Mereschkowsky, 1876 비단테히드라(신칭)
38. **Selaginopsis cornigera* (Kudelin, 1914) 뿔테히드라(신칭)
39. **Selaginopsis trilateralis* Fraser, 1936 벽돌테히드라(신칭)
40. **Selaginopsis pinnata* Mereschkowsky, 1878 우모테히드라(신칭)

SYSTEMATIC ACCOUNT

Family Sertulariidae Hincks, 1868

Hydrothecae sessile, arranged on both sides or all sides of branch and stem, operculum with 1-4 flaps, margin with teeth and intrathecal diaphragm present. Gonothecae simple, without any protective structures.

Key to the subfamilies of Sertulariidae

A. Hydranth without blind sac .... Sertomminae
AA. Hydranth with blind sac .... Sertulariinae

Subfamily Sertomminae Stechow, 1920

Blind sac absent in hydranth. Hydrothecae sessile, arranged in two longitudinal rows on the stem and branch.

Key to the genera of Sertomminae

A. Hydrotheca without teeth, operculum with one flap .... *Diphasia*
AA. Hyddotheca with distinct two teeth, operculum with two flaps
B. Hydrothecae largely alternate, sometimes opposite on the branch .... *Dynamena*
BB. Hydrothecae always opposite, more two pairs contact in succession and unequal in size .... *Pasythea*

Genus 1. *Diphasia* L. Agassiz, 1862

Hydrocaulus monosiphonic and branched. Hydrocladia opposite or subopposite or alternate. Hydrothecae arranged in two longitudinal rows, margin like mouth of a pitcher, slightly oblique, without teeth, operculum with one flap.

1. *Diphasia plamata* Nutting, 1905

Diphasia plamata: Stechow, 1913b, (143, fig. 117); Jäderholm, 1919, (16-17); Yamada, 1959, (54); Hirohito, 1969, (18); Rho & Chang, 1972, (103, pl. 4, figs. 14-15); Rho, 1974, (141).

Specimen examined: Sŏgwip'o, (B.J.Rho), EWUHyd1750412; Pomong-ri, (J.I.Song), EWUHyd1810522; Mip'o, (J.I.Song), EWUHyd1810525. 10-50m, with fishing net.

Distribution: Korea, Japan, Hawaii.

Genus 2. *Dynamena* Lamouroux, 1812

Hydrothecae opposite or subopposite or alternate. When hydrothecae opposite, more two pairs of hydrothecae contact in succession.

Key to the species of *Dynamena*

A. Hydrothecae subopposite .... *Dynamena crisioides*

AA. Hydrothecae subopposite on the stem and opposite on the branch····*Dynamena cornicina*

2. *Dynamena crisioides* Lamouroux, 1812

Dynamena crisioides: Bedot, 1905, (75); 1910, (293); 1916, (97); 1918, (124); Leloup, 1937a, (36-37); 1937b, (107); 1960, (228); Millard, 1958, (183); Millard & Bouillon, 1974, (32, fig. 6D); Yamada, 1958, (56-57, fig. 2, a-c); 1959, (56-57); Vervoort, 1959, (260-261, fig. 27, a-b); Vervoort & Vasseur, 1977, (35-36); Rho, 1967, (351, fig. 41,pl, 1, fig. 5); 1969, (169); 1974, (141); Rho & Chang, 1972, (103); Hirohito, 1969, (19); 1974, (15); 1977, (20-21, text-fig. 5).

Sertularia tubuliformis: Jäderholm, 1919, (15).

Thuiaria tubuliformis: Nutting, 1904, (70, pl. 11. figs. 1-8).

Dynamena tubuliformis: Stechow, 1923a, (12); Yamada, 1955, (354-355, pl. 23, figs. 1-2).

Speicmen examined: Sŏgwip'o, (B.J.Rho), EWUHyd2700803; Changsŭngp'o, (B.J.Rho), EWUHyd2700718; Mokto, (B.J. Rho), EWUHyd2740707; Hoedong, (B.J. Rho), EWUHyd2740805; Chŏpto, (B.J. Rho), EWUHyd2740806; Yŏnhwado, (B.J. Rho), EWUHYd2780719; Udo, (B.J. Rho), EWUHyd2790712; Wando, (J.I.Song), EWUHyd2810724; Shinhŭng-ri, (J.I.Song), EWUHYd2810725. Intertidal zone.

Distribution: Korea, Japan, Philippines, South China Sea, Indo-China Sea, Indonesia, Micronesia, Red Sea, South Africa, West Indies, Brazil, Florida, Annobon 1sl., Freetown.

3.* *Dynamena cornicina* McCrady, 1858 (Fig. 2, a-b, pl. 1, fig. a)

Sertularia cornicina: Nutting, 1904, (58, pl. 4, figs. 1-5); Bedot, 1910, (367); 1912, (363); 1918, (250); 1925, (395); Fraser, 1937, (161-162); 1938a, (54); 1938b, (135); 1938c. (110).

Dynamena cornicina: Leloup, 1934, (12-13); 1937a, (36); 1937b, (106-107, fig. 9); 1938, (6); 1939, (15-16, fig. 10); Cunha, 1944, (53-54 58, fig. 28); Pennycuik, 1959, (192); Yamada,1959, (58); Ree & Thursfield, 1964, (125-126); Mergner & Wedler, 1977, (16-18,.pl. 4,fig. 27, a-b, pl. 7, fig. 49).

Specimen examined: Mip'o, (B.J.Rho), EWUHyd3740716, EWUHYd3750515. 10-50m, with fishing net.

Description: The hydrocaulus divided into regular internodes. Hydrocladia arising from the base of each internode of hydrocaulus, arranged in alternate to right and left sides. Hydrothecae subopposite on the hydrocaulus and opposite on the hydrocladia, long tubuliform, margin with two distinct teeth, operculum with two flaps. No gonothecae have been observed.

Measurement (in milliters)	EWUHyd3740716
Hydrocaulus, length of internode	1.10- 1.52

idem, diameter at node	0.14- 0.24
Hydrocladia, length of internode	0.43- 0.58
idem, diameter at node	0.07- 0.09

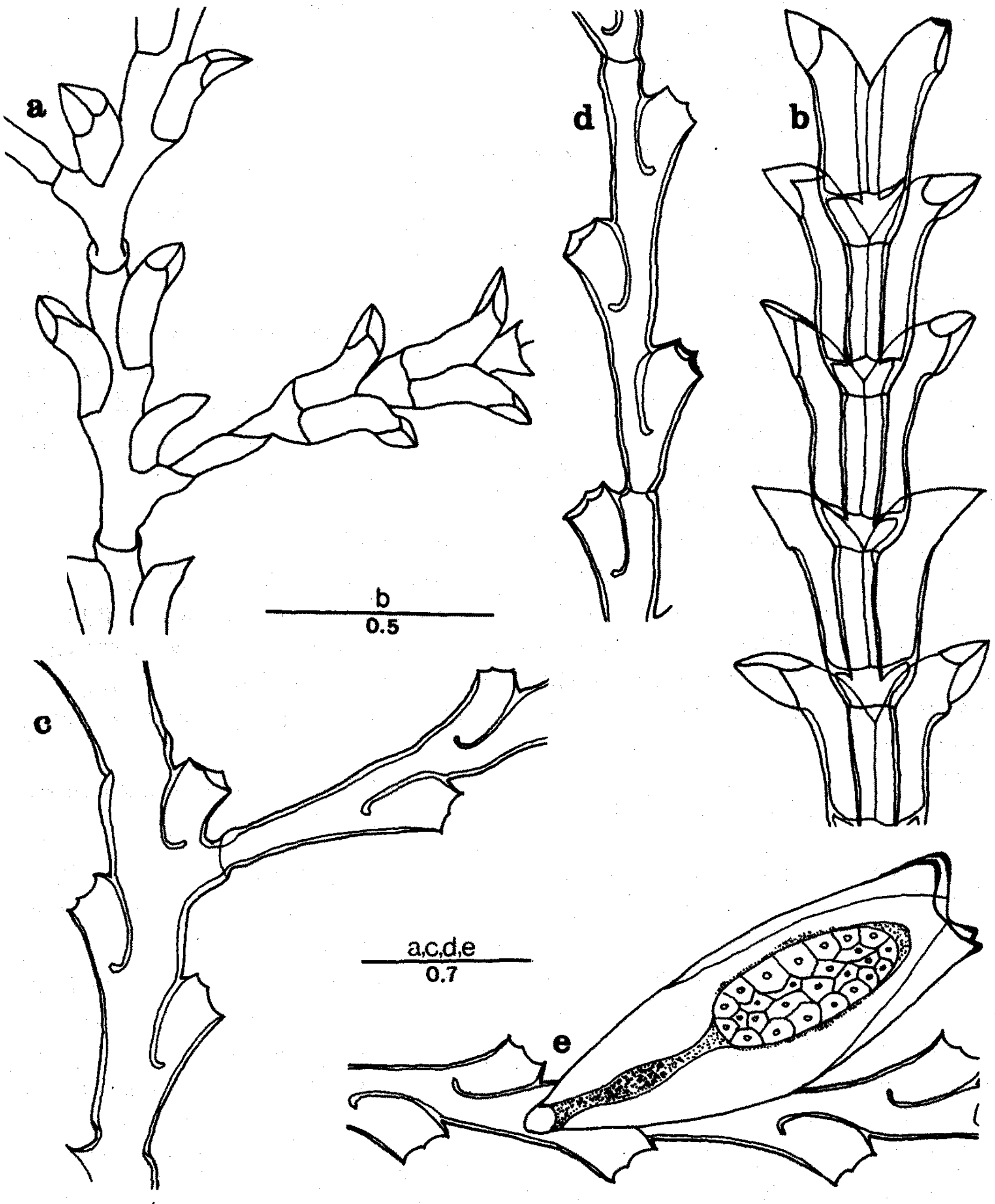


Fig. 2. a-b.*Dynamena cornicina:* a. portion of erect stem with beranches; b. enlarged hydrothecae. c-e. *Sertularella distans:* c. portion of erect stem with branch; d. portion of branch showing the internode; e. gonotheca on the branch. Unit of each scale in millimeter.

Hydrotheca, length of abcauline wall	0.30- 0.38
idem, length of fused adcauline wall	0.27- 0.33
idem, length of free adcauline wall	0.16- 0.25
idem, diameter at margine	0.13- 0.14
idem, diameter at base	0.11- 0.12
Total length of colony	11.00-17.00

Remarks: This species has been so far recorded from several localities by many workers. The type specimen from Charleston Harbor has been destroyed by fire in Charleston during the Civil War (Nutting, 1904). The identification of this species has been based mainly on Mergner & Wedler's work (1977). Though the present specimens are sterile and the colony size is smaller than that of the Red Sea, the characteristic shape and arranging pattern of hydrothecae and branching pattern are in perfect agreement with Mergner & Wedler's description and figures. The gonosome has been reported by Nuttting(1904). After his description, the gonangiae born at the base of stem, subglobular-shaped, with narrow round collar and large aperture and with regular annulations on the wall throughout.

Distribution: Korea, Japan, Indo-China Sea, Indonesia, Australia, California, Woodshole, Heron Isl., Charleston Harbour, Carbibbean Sea, Bermuda, Brazil, Mediterranean, Dunwich, Zamzibar, South Africa, Suez Canal.

Genus 3. *Pasythea* Lamouroux, 1812

Hydrothecae opposite, two or more pairs grouped, each pair of group unequal in size, margin with two teeth and operculum with two flaps. Gonothecae oval-shaped.

4. *Pasythea nodosa* Hargitt, 1908

Pasythea nodosa: Stechow, 1913b, (150-151, figs. 129-130); Bedot, 1925, (315); Rho, 1967, (358, fig. 21, A-C); 1969, (171); 1974, (141); Rho & Chang, 1972, (104).

Specimen examined: Hoedong, (B.J. Rho), EWUHyd4740805; Kuryongp'o, (B.J. Rho), EWUHyd4751225; Mundo, (B.J. Rho), EWUHyd4781130; Sŏgwip'o, (B.J. Rho), EWUHyd4790713, (J.I. Song), EWUHyd4820522. Intertidal zone.

Distribution: Korea, Japan, Woodshole.

Subfamily Sertulariinae Stechow, 1920

Blind sac present in the hydranth. Hydrothecae sessile, arranged in two or more longitudinal rows on the hydrocladia.

Key to the genera of Sertulariinae

A. Operculum with three flaps .... *Symplectoscyphus*
AA. Operculum with four flaps .... *Sertularella*
AAA. Operculum with one flap
  B. Margin without teeth .... *Abietinaria*
  BB. Margin with two teeth
    C. Hydrothecae arranged in two longitudinal rows on the hydrocladia .... *Thuiaria*

CC. Hydrothecae arranged in three or more longitudinal rows on the hydrocladia .... *Selaginopsis*

AAAA. Operculum with two flaps

B. Margin with two larg lateral teeth and one small adcauline tooth .... *Amphisbetia*

BB. Margin with two teeth .... *Sertularia*

Genus 4. *Symplectoscyphus* Marktanner-Turneretscher, 1890

Hydrocaulus monosiphonic or polysiphonic and branched. Hydrothecae arranged in two longitudinal rows or spirally, margin with three teeth. Gonothecae arising from the hydrothecae, oval or pear-shaped.

5. *Syplectoscyphus hozawai* Stechow, 1931

Symplectoscyphus hozawai Stechow, 1931, (171-180); Stechow & Uchida, 1931, (551-553, text-fig. 4); Yamada, 1955, (17, fig. 1); Rho, 1967, (15, fig. 18, pl. 1, fig. 7); 1974, (12).

Specimen examined: Mip'o, (B.J. Rho), EWUHyd5740512; Hoedong, (B.J. Rho), EWUHyd-5740805; Chọpto, (B.J. Rho), EWUHyd5740806; Supto, (B.J. Rho), EWUHyd5750415; Yonhwado, (B.J. Rho), EWUHyd5780719; Yejakto, (B.J. Rho), EWUHyd5810721; Taedundo, (J.H. Park), EWUHyd5820722. Intertidal zone.

Distribution: Korea, Japan.

Genus 5. *Sertularella* Gray, 1848

Hydrocaulus monosiphonic or polysiphonic, largely branched. Hydrothecae arranged in two longitudinal rows, margin with three or four teeth. Gonothecae oval-shaped, with or without tranverse ridges.

Key to the species of *Sertularella*

A. Hydrothecal wall smooth

B. Gonotheca arising from the base of hydrotheca .... *Sertularella distans*

BB. Gonotheca arising from the hydrotheca .... *Sertularella tongensis*

AA. Hydrothecal wall corrugated

B. Hydrocladia monosiphonic

C. Corrugation of hydrothecal wall undistinct

D. Margin with three teeth .... *Sertularella levigata*

DD. Margin with four teeth

E. Hydrothecae alternate in long distance .... *Sertularella robusta*

EE. Hydrothecae subopposite

F. Hydrotheca flask-shaped .... *Sertularella solidula*

FF. Hydrotheca vase-shaped .... *Sertularella quinquelaminata*

EEE. Hydrothecae alternate in short distance

F. Gonothecal wall smooth .... *Sertularella lagenoides*

FF: Gonothecal wall corrugated

G. Gonothecae with or without obtuse distal process .... *Sertularella obtusa*

GG. Gonothecae with long and pointed distal process .... *Sertularella miurensis*
CC. Corrugation of hydrothecal wall distinct
D. Hydrothecal wall corrugated irregularly .... *Sertularella tenella*
DD. Hydrothecal wall corrugated regularly
E. Colony reticulate .... *Sertularella sinensis*
EE. Colony straight
F. Hydrothecae with three marginal teeth .... *Sertularella gotoi*
FF. Hydrothecae with four marginal teeth .... *Sertularella pedrensis*
BB. Hydrocaulus polysiphonic .... *Sertularella gayi*

6. *Sertularella distans (Allman, 1877) (Fig. 2, c-e, pl. 1, fig. b)

Thuiaria distans Allman, 1877, (27, pl. 17, figs. 1-2); Bedot, 1912, (378); 1916, (245); 1918, (276); 1925, (443).

Sertularella distans: Nutting, 1904, (88, pl. 19, figs. 5-6); Fraser, 1944, (260, pl. 55, fig. 245, a-c).

Specimen examined: Sŏgwip'o, (B.J. Rho), EWUHyd6691215. 10-50m, with fishing net.

Description: Hydrocaulus monosiphonic, divided into regular internodes, each internode with three hydrothecae and one hydrocladia. Hydrocladia arising from the cauline process, arranged alternately to right and left sides and divided into regular internodes. Hydrothecae alternate, beaker-shaped, narrowing slightly towards the base, margin with four teeth, operculum with four flaps. Gonothecae arising from the base of hydrothecae, very large, oblong-shaped, wall with four longitudinal grooves from one-third below to distal end, distal portion with four short processes.

Measurement (in millimeters)	EWUHyd6691215
Hydrocaulus, length of internode	1.70- 1.60
idem, diameter at node	0.27- 0.31
Hydrocladium, length of internode	1.55- 1.88
idem, diameter at node	0.16- 0.18
Hydrotheca, total length	0.40- 0.38
idem, diameter at base	0.13- 0.14
idem, diameter at margin	0.20- 0.21
Gonotheca, total length	0.21
idem, maximum diameter	0.71
Length of colony(fragment)	29.00

Remarks: Allman(1877) reported this species without gonosome as *Thuiaria distans* from Tortugas. His unbroken colony was about four inches in height. He found the canaliculated coenosac of stem and placed it in the genus *Thuiaria*. However Nutting(1904) and we could not find the appearance like that. Nutting compared his samples with Allman's type specimen in the Museum of Comparative Zoology at Harvard and his samples were turned out to be in agreement with it. So this species was considered as the synonym of *Thuiaria distans* without doubt. And also regarding the points of the shape and arranging pattern of hydrothecae, we cosider that the *Sertularella* is more appropriate genus than *Thuiaria*. The distinct characteristic of this species is that the successive hydrothecae are placed in the long distance.

Distribution: Korea, Tortugas, between Eleuthera and Little Cat Isl., Bahamas, off Haven, off Dry Tortugas, off Yucatan, Puerto Rico.

7. ***Sertularella tongenis*** Stechow, 1919, (Fig. 3, a-b, pl. 1, fig. c)

Sertularella tongenis Stechow, 1919, (89-91, figs. F-G); Vervoort & Vasseur, 1977, (52-53,

Specimen examined: Ch'ŏngsa, (B.J. Rho), EWUHyd7780606; Mundo, (B.J. Rho), EWUHyd-7781231.

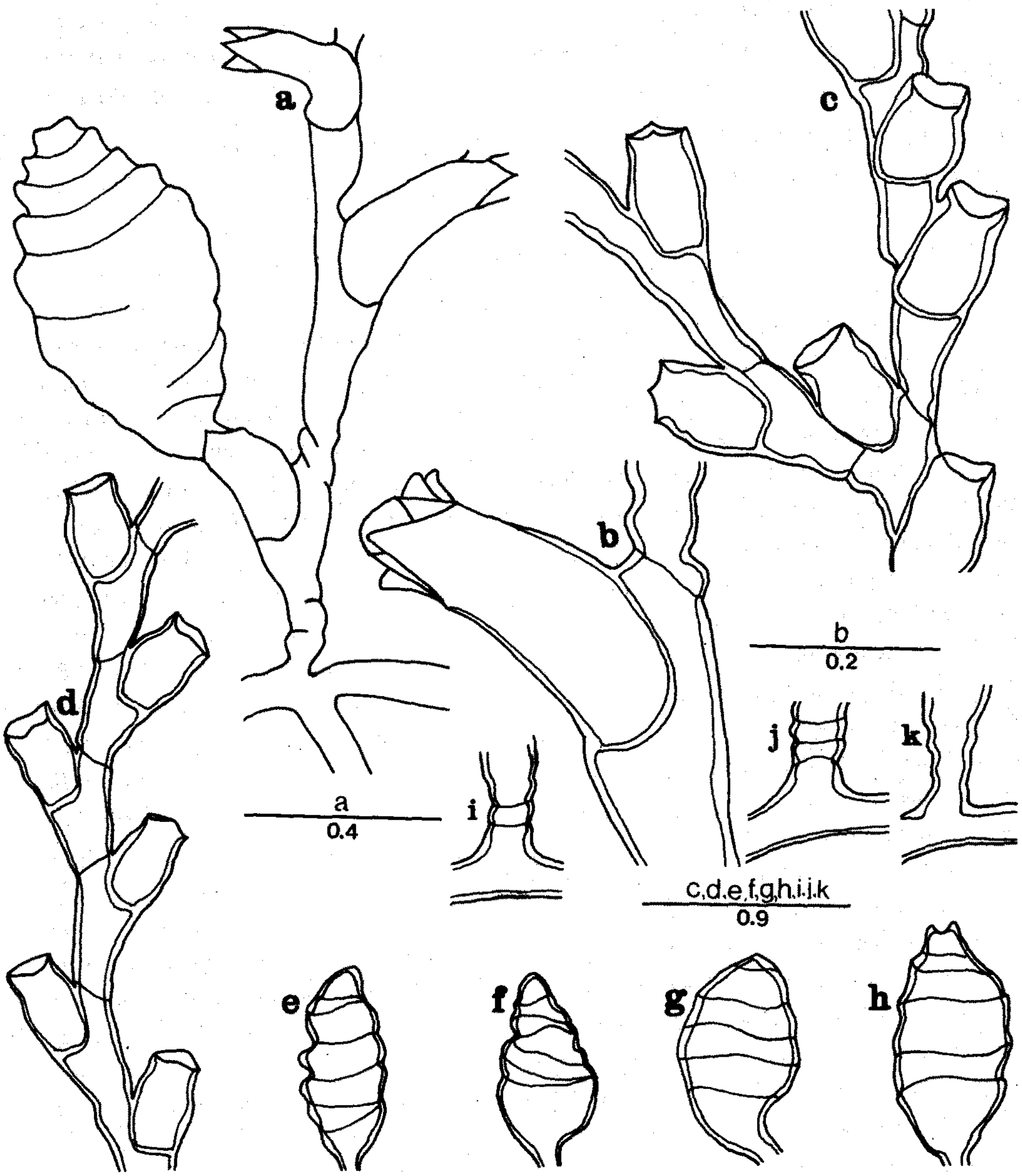


Fig. 3. a-b. *Sertularella tongensis:* a. portion of erect stem with gonotheca; b. enlarged hydrotheca. c-k. *Sertularella obtusa:* c. portion of stem with branch; d. hydrothecae on the branch: e-h. gonothecae; i-k, basal portion of colonies. Unit of each scale in millimeter.

Description: Colonies very small, attached on algae, mostly unbranched. Hydrocaulus divided into regular internode with one hydrotheca. Hydrothecae arranged alternately to right and left sides, cylinder-shaped, about two-fifth below of adcauline wall adnate and remaining free, margin sometimes renovated repeatedly in various forms, so that it is difficult to distinguish the margin structure, margin with two teeth, operculum with two flaps. Gonothecae comparatively large, arising from the hydrothecae, oval-shaped, tranversely corrugated and with short tubular neck.

Measurement (in millimeters)	EWUHyd7781231
Hydrocaulus, length of internode	0.30- 0.43
idem, diameter at node	0.04- 0.07
Hydrotheca, length of abcauline wall	0.19- 0.22
idem, length of fused adcauline wall	0.11- 0.15
idem, length of free adcauline wall	0.18- 0.20
idem, diameter at margin	0.09- 0.10
idem, maximum diameter	0.11- 0.13
Gonotheca, total legth	0.69- 0.74
idem, maximum diameter	0.45- 0.56
idem, length of neck	0.03- 0.04
Length of colony	4.00- 8.00

Remarks: Many small specimens growing on algae with gonosome were sampled from Mundo and Ch'ŏngsa, shallow waters. This species has been reported by Stechow(1919) from Tonga Island. Though the present specimens are unbranched and the stem is divided into undistinct internodes, the shape of hydrothecae and gonothecae and particularly the hydrothecal margin renovated repeatedly in various forms leave no room for doubt. *S. tongensis* is uncommon species. This record is the second time since the Stechow's description. Now it has been reported only from the South Pacific Ocean and the Korean waters.

Distribution: Korea, Tonga Isl., Moorea.

8. ***Sertularella levigata*** Stechow, 1931

Sertularella levigata Stechow, 1931, (183-184); Stechow & Uchida, 1931, (559-561, text-fig. 9); Leloup, 1940, (9-11, fig. 4, A-E); Yamada, 1959, (61); Rho, 1967, (352-353, fig. 15, pl. 1, Fig. 6); 1969, (169); 1974, (143); Rho & Chang, 1972, (103).

Specimen examined: Mijodo, (B.J. Rho), EWUHyd8740708; Mip'o, (B.J. Rho), EWUHyd8740714, EWUHyd8741219, EWUHyd8750511, EWUHyd8760418, (S. Shin), EWUHyd8761206; Hoedong, (B.J. Rho), EWUHyd8740805; Nokchin, (B.J. Rho), EWUHyd8740804; Sogwip'o, (B.J. Rho), EWUHyd8750413, EWUHyd8750511; Ŏch'ŏngdo, (J.I. Song), EWUHyd8780410; Sŏngsanp'o, (B.J. Rho), EWUHyd8790713; Yesong-ri, (S. Shin), EWUHyd8810721; Sangju-ri, (J.I. Song), EWUHyd8810524; P'ohang, (J.H. Park), EWUHyd8831124; Samch'ŏnp'o, (J.H. Park), EWUHyd8840720. Intertidal zone.

Distribution: Korea, Japan.

9. ***Sertularella robusta*** Coughtrey, 1836

Sertularella robusta: Totton, 1930, (195-196); Ralph, 1961, (824-825, fig. 22, a-d); Leloup, 1960, (234, fig. 7, a-b); 1973, (33, fig. 27); Vervoort & Vasseur, 1977, (40-52, figs. 18-22); Rho & Park, 1980, (10-11, pl. 5, figs. 4-7).

Specimen examined: Chakyakto, (S.R. Chang), EWUHyd9751005, (J.H. Park), EWUHyd9830910; Sŏngsangp'o, (S. Shin), EWUHyd9781001; Shinhŭng-ri, (J.I. Song), EWUHyd9810725. 10-50m, with fishing net.

Distribution: Korea, Santa Cruz, Gulf of Ancud, Tierra del Fuego, Strait of Magdallen, North Cape, Australia, Tasmania, New Zealand.

10. *Sertularella solidula* Bale, 1882

Sertularella solidula: Stechow, 1913b, (136-137); Rho & Park, 1983, (43-44, pl. 4, fig. 6, pl. 5, figs. 1-2).

Specimen examined: Kyŏkp'o-ri, (B.J. Rho), EWUHyd10750711; Yokchido, (B.J. Rho), EWUHyd10780704; Taehŭksando, (J.H. Park), EWUHyd10780705; Kŏmundo, (J.I. Song), EWUHyd10791222; Yesong-ri, (S. Shin), EWUHyd10810723; Shinhŭng-ri, (J.I. Song), EWUHydl0810725. Intertidal zone.

Distribution: Korea, Japan.

11. *Sertularella quinquelaminata* Stechow, 1931

Sertularella quinquelaminata Stechow, 1931, (180-181); Stechow & Uchida, 1931, (553-554, text-fig. 5); Yamada, 1959, (64); Rho, 1967, (334-335, fig. 17).

Specimen examined: Pangjukp'o, (B.J. Rho), EWUHyd11670522; Mijo-ri, (B.J. Rho), EWUHyd11740806; Sŏgwip'o, (B.J. Rho), EWUHyd11750412; Shinsudo, (J.H. Park), EWUHyd11840721. Intertidal zone.

Distribution: Korea, Japan.

12. *Sertularella lagenoides* Stechow, 1919

Sertularella lagenoides Stechow, 1919, (86-87, fig. C); 1923b, (195, fig. E); Leloup, 1934, (14); Rho & Chang, 1972, (104, pl. 4, figs. 16-17); Rho, 1974, (143).

Specimen examined: Taedundo, (J.H. Park), EWUHyd12820722. Intertidal zone.

Distribution: Korea, Mediterranean.

13. *Sertularella obtusa Stechow, 1931 (Fig. 3, c-k, pl. 1, fig. d)

Sertularella obtusa Stechow, 1931, (181-183); Stwchow & Uchida, 1931, (558-559, text-fig. 8).

Specimen examined: Anmyŏndo, (B.J. Rho), EWUHyd13730808; Hoedong, (B.J. Rho), EWUHyd13740805; Taehŭksando, (J.H. Park), EWUHyd13780705; Sŏgwip'o, (B.J. Rho), EWUHyd13790713. Intertidal zone.

Description: Colonies arising from the stolon criping on algae, branched or unbranched. Hydrocaulus with 1-4 annulations at the base, divided into regular internodes. Hydrothecae arranged alternately to right and left sides, flask-shaped, hydrothecal wall with 2-5 corrugations, margin with four teeth and operculum with four flaps. Gonothecae arising from the base of hydrocaulus or stolon, oblong-shaped, distal end with or without processes and gonothecal wall folded transversally overall.

Measurement (in milliters)	EWUHyd13780705
Hydrocaulus, length of internode	0.39- 0.44
idem, diameter at node	0.07- 0.10
Hydrotheca, length of abcauline wall	0.33- 0.36
idem, length of fused adcauline wall	0.13- 0.19

idem, length of free adcauline wall	0.23- 0.32
idem, maximum diameter	0.27
idem, diameter at base	0.11- 0.20
idem, diameter at margin	0.18- 0.21
gonotheca, total length	0.78- 1.15
idem, maximum diameter	0.40- 0.43
Length of colony	7.00-15.00

Remarks: This species was reported by Prof. Hozawa from Emmusubi-Jido(Japan) and his type specimen was not branched. Though the stems of present specimens are branched or unbranched, the comparison of our specimens with Stechow's(1931) description shows mostly complete conformity. The characteristic of this species is the shape of gonothecae with two low processes or without any processes on the distal end.

Distribution: Korea, Japan.

14. *Sertularella miurensis* Stechow, 1921

Sertularella miurensis Stechow, 1921, (258); 1923a, (13); 1923b, (175-177, fig. T); Yamada, 1950, (11-12); 1957, (158); 1958, (57-58); 1959, (62); Ito & Ioue, 1962, (86, pl. 8, fig. 8U); Kubota, 1976, (238, fig. 4, 8-9); Hirohito, 1969, (22-23); Ree & Thursfield, 1964, (145); Rho, 1967, (353, fig. 15, A-B); 1969, (169-170); 1974, (143); Rho & Chang, 1972 (103).

Specimen examined: Sŏgwip'o, (B.J. Rho), EWUHyd14691215, EWUHyd14711226, EWUHyd-14720708, EWUHyd14750412, EWUHyd14790712, (J.I. Song), EWUHyd14820522; Kujora, (B.J. Rho) EWUHyd14700721; Anmyŏndo, (S.R. Chang), EWUHyd14730809; Haeundae, (B.J. Rho) EWUHyd14740511; Mijodo, (B.J. Rho), EWUHyd14740705; Sangju-ri, (B.J. Rho), EWUHyd-14740706; Mokto, (B.J. Rho), EWUHyd14740707; Hoedong, (B.J. Rho), EWUHyd14740805; Chŏpto, (B.J. Rho), EWUHyd14740806; Sŏngsanp'o, (B.J. Rho), EWUHyd14750414; Kyŏkp'o-ri, (J.I. Song), EWUHyd14750807; Komso, (B.J. Rho), EWUHyd14800612; Pŏmdo, (J.I. Song), EWUHyd14800730; Yŏsŏdo, (H.S. Kim), EWUHyd14820820; Mip'o, (S. Shin), EWUHyd14830705; Taech'ŏnhaesuyokchang, (J.H. Park), EWUHyd14840702; Pijindo, (J.H. Park), EWUHyd14840719; Kŭndŏkhaesuyokchang, (J.I. Song), EWUHyd14840807. Intertidal zone.

Distribution: Korea, Japan.

15. **Sertularella tenella* (Alder, 1856) (Fig. 4, a-d, pl. 1, e)

Sertularella tenella Alder, 1856, (357, pl. 13, figs. 3-6).

Sertularella tenella: Hincks, 1868, (242); Nutting, 1904, (83-84, pl. XVIII, figs. 1-2); Bedot, 1905, (108); 1910, (363-364); 1916, (213); 1918, (245-246); 1925, (387-388); Jäderholm, 1905, (31, pl. 12, fig. 8); Fraser, 1937, (158-159, pl. 36, fig. 190, a-c); 1944, (273-274, pl. 6, fig. 263, a-c); Ree & Thursfield, 1964, (138); Calder, 1970, (1529-1531, pl. 6, fig. 6).

Specimen examined: Chakyakto, (B.J. Rho), EWUHyd15681012, EWUHyd15731014, EWUHyd-15750712, EWUHyd15751005, (J.H. Park), EWUHyd15781102; Yŏndo, (B.J. Rho), EWUHyd-15710722; Mip'o, (B.J. Rho), EWUHyd15750511; Pŏmdo, (J.I. Song), EWUHyd15800730. Intertidal zone.

Description: Colonies small and unbranched. Hydrocaulus zigzag-shaped, divided into regular internodes, each internode with one hydrotheca. Hydrothecae arranged in alternate, fusiform,

hydrothecal wall with distinct 3-8 corrugations, margin with four teeth and operculum with four flaps. Gonothecae arising from the base of colony and hydrorhiza, conical-shaped, gonothecal wall with numerous annulations, margin with 3-5 processes.

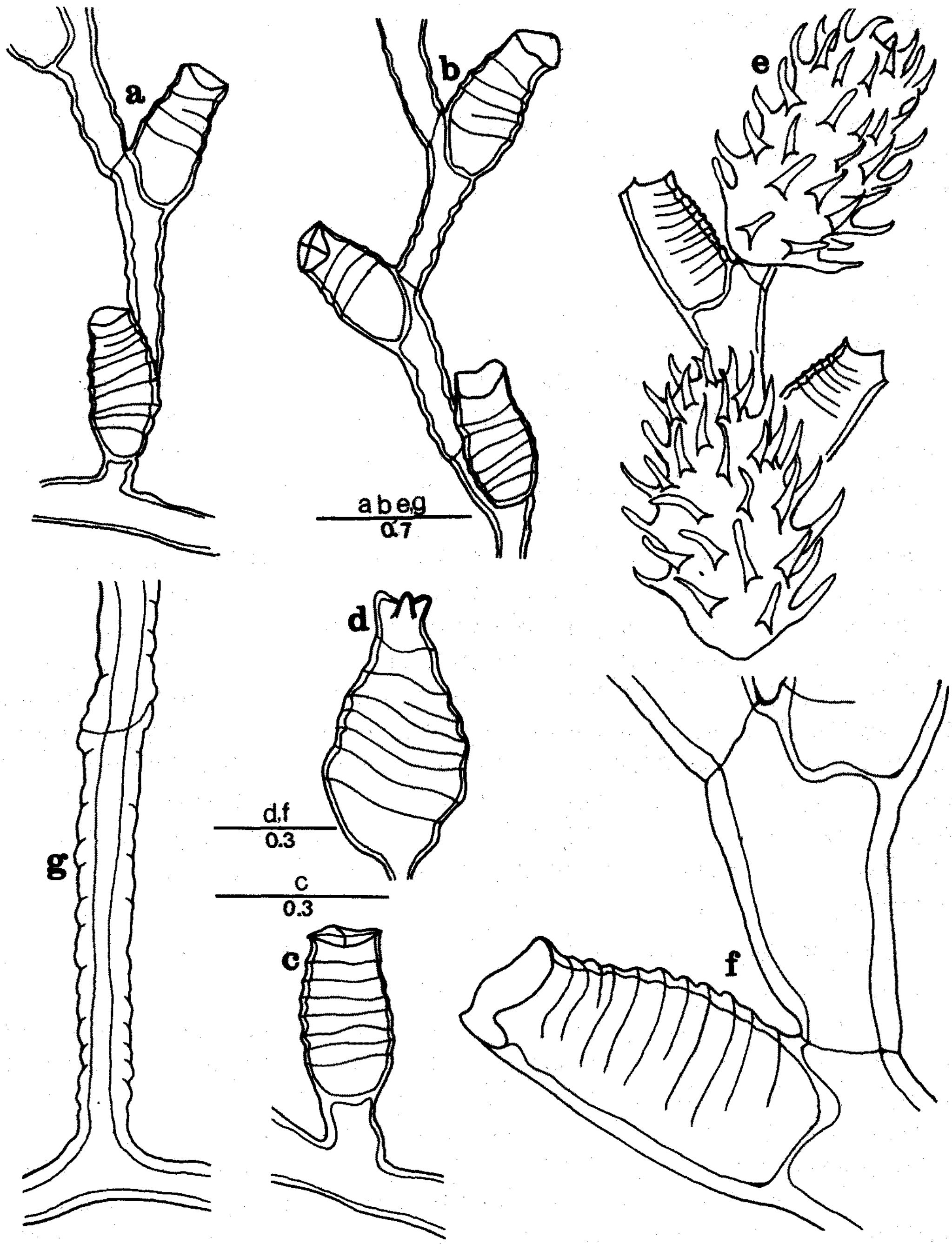


Fig. 4. a-d. *Sertularella tenella:* a. basal portion of colony; b. middle portion of colony; c. solitary hydrotheca; d. gonotheca. e-g. *Sertularella pedrensis:* e. apical portion with gonothecae and hydrothecae of colony; f. enlarged hydrotheca; g. basal portion of colony. Unit of each scale in millimeter.

Measurement (in milliters)	EWUHyd15781102
Hydrocaulus, length of internode	021-0.50
idem, diameter at node	0.05
Hydrocladia, total length	0.22-0.24
idem, maximum diameter	0.12-0.13
Gonotheca, total length	0.40-0.63
idem, maximum diameter	0.23-0.39
idem, diameter at margin	0.09-0.15
Length of colony	3.00-8.00

Remarks: This little species has been reported by Alder(1856) from Northumberland. Alder's specimens were growing on *Plumularia falcata* and other zoophytes. The type specimen was deposited in the Museum of the Natural History Society, Newcastle-upon-Tyne, England. This species is similar to *Sertularella rugosa* (Linnaeus, 1758) reported by Fraser(1944). However *Sertularella rugosa* is more erect and it's internode is shorter than this species. Specially this species is distinguished from *S. rugosa* by the shape of gonothecae. This species also resembles *Sertularella geniculata* Hincks, 1874 reproted by Fraser(1944) and Nutting(1904) in various characters. We have found only one difference in both species. The internode of this species is annulated throughout, but that of *S. geniculata* is annulated only one time at the base of each internode. We consider that this species have to be further more studied.

Distribution: Korea, Japan, Sea of Okhotsk, Bering Sea, Alaska, Canada, Secas Isl., Australia, Newzealand, Argentina, Brazil, Caribbean Sea, West Indies, Cuba, Bermuda, Northumberland, north of Cheticamp Isl., Greenland, Barents Sea.

16. *Sertularella sinensis* Jäderholm, 1896

Sertularella sinensis: Stechow, 1913b, (129-130, figs. 99-100); 1923a, (13); Jäderholm, 1919, (17); Bedot, 1925, (385); Yamada, 1959, (65-66); Ree & Thursfield, 1962, (138-139); Hirohito, 1969, (23); Rho, 1974, (144, pl. 5, figs. 1-2).

Specimen examined: Chejuhang, (B.J. Rho), EWUHyd16650708; Mip'o, (B.J. Rho), EWUHyd-16740512; EWUHyd16741219, EWUHyd16750425, EWUHyd16760705, (J.I. Song), EWUHyd-16810525; Sŏgwip'o, (B.J. Rho), EWUHyd16750415, (J.I. Song), EWUHyd16820522; Supto, B.J. Rho), EWUHyd16750415; Pusan, (J.I. Song), EWUHyd16810526; Toch'ŏng-ri, (S. Shin), EWUHyd16810725; Pŏmdo, (J.I. Song), EWUHyd16820521. 10-50m, with fishing net.

Distribution: Korea, Japan.

17. *Sertularella gotoi* Stechow, 1913

Sertularella gotoi Stechow, 1913a, (142); 1913b, (132-133, fig. 104); Rho, 1974, (142-143, pl. 5, figs. 3-5).

Specimen examined: Anmyŏndo, (B.J. Rho), EWUHyd17730810; Mip'o, (B.J. Rho), EWUHyd-17750405, (J.I. Song), EWUHyd17810525, (J.H. Park), EWUHyd17831126; Toch'ong-ri, (S. Shin), EWUHyd17740727; Todong, (J.I. Song), EWUHyd17840710. Intertidal zone.

Distribution: Korea, Japan.

18. *Sertularella pedrensis Torrey, 1904 (Fig. 4, e-g, pl. 1, fig. f)

Sertularella pedrensis: Bedot, 1925, (377); Fraser, 1937, (155, pl. 35, fig. 185, a-c).

Specimen examined: Nohwado, (J.I. Song), EWUHyd18810820. About 30m.

Description: Colonies slender and spirally branched. Hydrocaulus divided into regular internodes, each internode with one hydrotheca. Hydrothecae arranged alternately to right and left sides, barrel-shaped, adcauline wall with very well developed corrugations, margin with three teeth and operculum with three flaps. Gonotheca arising from the opposite portion of hydrotheca, oval-shaped and the wall of gonothecae with pointed slightly curved processes throughout.

Measurement (in milliters)	EWUHyd18810820
Hydrocaulus, length of internode	0.56- 0.67
idem, diameter at node	0.18- 0.19
Hydrotheca, length of abcauline wall	0.53- 0.59
idem, length of fused adcauline wall	0.13- 0.15
idem, length of free adcauline wall	0.37- 0.50
idem, diameter at base	0.16- 0.23
idem, diameter at margine	0.20- 0.22
Gonotheca, total length	0.77- 1.28
idem, maximum diameter	0.45- 0.58
Length of colony	10.00-44.00

Remarks: The identification of this species has been based on the Fraser's(1937) work. Though our valuable specimen branched spirally, besides, other characters of ours are in agreement with Fraser's description and figures. This species resembles with *Sertularella gotoi* reported by Stechow(1913a) and Rho(1974), but *S. pedrensis* is distinguished from the latter by many distinct annulations on the adcauline wall of hydrothecae, shorter pointing curved processes like a spine on the gonothecal wall throughout and colony structure. The type locality is San Pedro.

Distribution: Korea, California, Southampton.

19. *Sertularella gayi Lamouroux, 1821 (Fig. 5, a-b, pl. 2. fig. a)

Sertularella gayi: Bedot, 1905, (105); 1910, (360); 1912, (354); 1916, (204); 1918, (238); 1925, (368-369); Billard, 1906a, (73); 1906b, (330); 1909, (315); Hargitt, 1924, (495-496, pl. 5, fig. 21); Stechow, 1912, (359); 1919, (89); 1925, (482-483); Leloup, 1937a, (37, fig. 24); Cunha, 1944, (46, fig. 23); Fraser, 1944, (262-263, pl. 56, fig. 248); Vervoort, 1949, (151-152); 1959, (273-275, figs. 33, b-c, 34, b); Ree & Thurfield, 1964, (134-135); Hirohito, 1969, (21-22, fig. 15); Ralph, 1961, (833-834, fig. 24, d-f).

Specimem examined: Chakyakto, (B.J. Rho), EWUHyd19731214, EWUHyd19740917, EWUHyd19760925, (J.H. Park), EWUHyd19780902. Intertidal zone.

Description: Colonies shrub-shaped and branched. Hydrocaulus polysiphonic, however distal part monosiphonic, divided into regular internodes, each internode with one hydrotheca. Hydrothecae arranged alternately to right and left sides, long flask-shaped, a few gentle corrugations on the free part of adcauline wall, but the abcauline wall smooth, margin with four teeth and operculum with four flaps. No gonothecae have been observed.

Measurement (in millimeters)	EWUHyd19780902
Hydrocaulus, length of internode	0.52- 0.57
idem, diameter at node	0.30- 0.35
Hydrocladia, length of internode	0.48- 0.58
idem, diameter at node	0.25- 0.29

Hydrotheca, length of abcauline wall	0.56- 0.59
idem, length of fused adcauline wall	0.35- 0.38
idem, length of free adcauline wall	0.35- 0.38
Length of colony	20.00-28.00

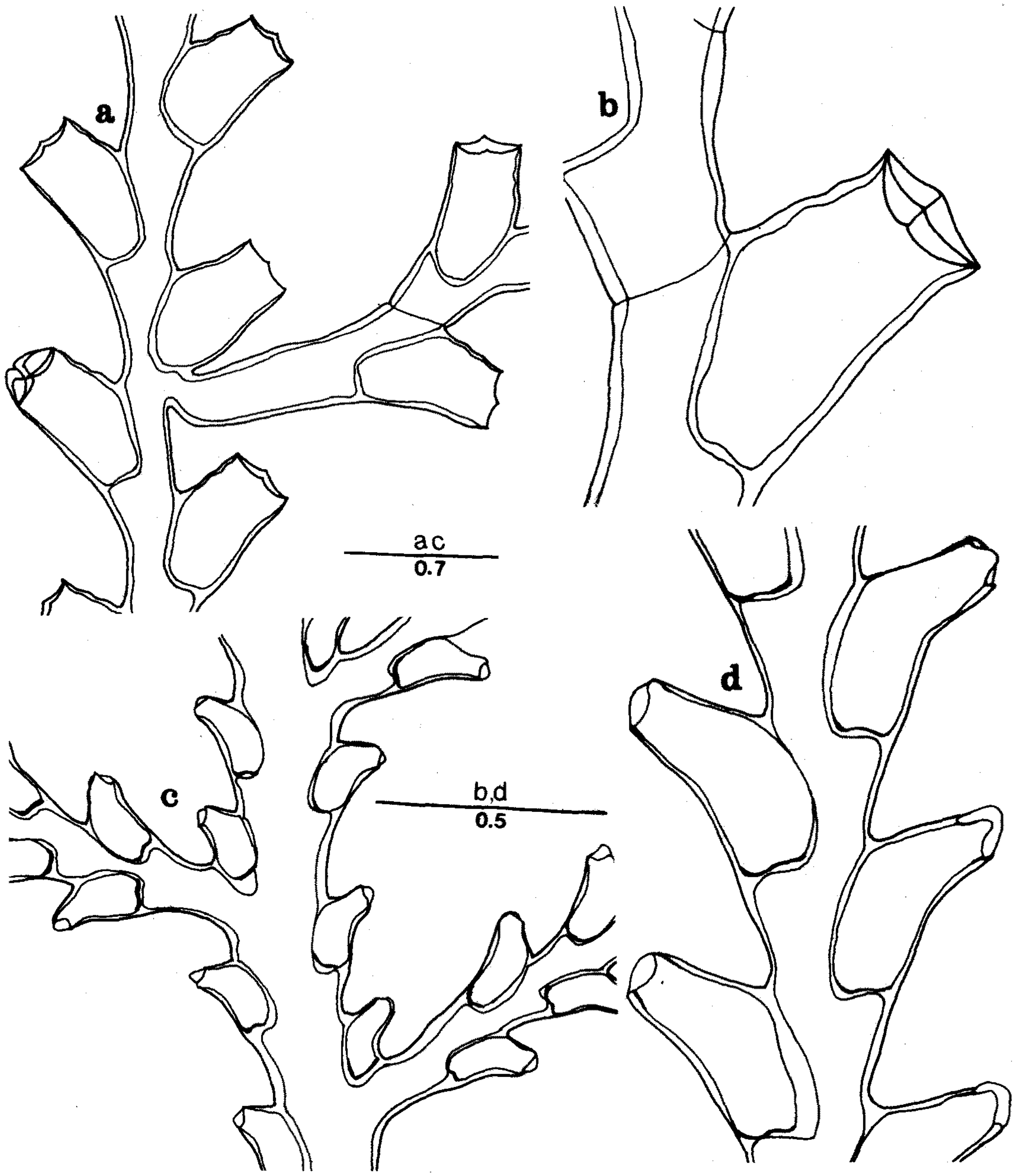


Fig. 5. a-b. *Sertularella gayi:* a, portion of stem with branch; b. enlarged hydrotheca. c-d. *Abietinaria traski:* c. portion of erect stem with branch; d. enlarged hydrothecae. Unit of each scale in millimeter.

Remarks: The descriptions and figures of Nutting(1904), Fraser(1944) and Vervoort(1959) were refered to in the identification of this species. The shape of hydrothecae, irregular branching pattern and fascicled stem at the base are in agreement with those of theirs. Though the present specimens are sterile, the identification admits of no doubt. *S. gayi* is similar in general form to *S. polyzonias* (Linnaeus, 1758) reported by Nutting(1904) and Ralph(1961). But this species can be distinguished from *S. polyzonias* by the fascicled stem at the base and distinct undulations of adcauline wall of hydrothecae.

Distribution: Korea, Japan, Bering Sea, Philippine, New Zealand, Peru, Cuba, Mexico, Atlantic coasts of America, Gulf of St. Lawrence, Greenland, Sweden, Norway, English Channel, Portugal, Mediterranean, Moroco, Cape of Good Hope.

Genus 6. *Abietinaria* Kirchenpauer, 1884

Hydrothecae arranged in alternate or opposite or subopposite, bottle—shaped, margin without teeth, above portion narrower than below portion and operculum with a single adcauline flap. Gonotheca simple, without processes or marsupium.

20. ****Abietinaria traski* (Torrey, 1902) (Fig. 5, c-d, pl. 2, fig. b)

Sertularia traski Torrey, 1902, (69).

Abietinaria traski: Nutting, 1904, (118-119, pl. 33, figs. 6-11); Stechow, 1923a, (14); Fraser, 1937, (135-136, pl. 29, fig. 156, a-b); Yamada, 1959, (67).

Specimen examined: Sŏgwip'o, (B.J. Rho), EWUHyd20691215; Pŏmdo, (B.J. Rho), EWUHyd-20710207. 30-100m, with fishing net.

Description: Colonies feather-shaped, and whitish in five percent formalin solution. Hydrocaulus long, straight, light horn color, undivided into regular internodes and proximal portion without hydrocladia. Hydrocladiae alternate, undivided into regular internodes. Hydrothecae barrel-shaped, below portion swallen, tapering toward the distal portion, margin round and smooth, operculum with one adcauline flap. No gonothecae have been observed.

Measurement (in millimeters)	EWUHyd20691215
Hydrocaulus, length of between successive hydrocladiae	0.83- 1.00
idem, diameter	0.41- 0.45
Hydrocladia, total length	0.800-12.00
Hydrotheca, length of abcauline wall	0.29- 0.34
idem, length of fused adcauline wall	0.28- 0.29
idem, length of free adcauline wall	0.19- 0.22
idem, diameter at margin	0.07-0.09
idem, diameter at base	0.08- 0.22
idem, maximum diameter	0.16- 0.18
Length of colony	26.00-102.00

Remarks: Our specimens are sterile, but the remarkable features of colony and hydrothecae are identical with the Nutting's(1904) and Fraser's(1937) specimens. So that identification has no any questions. This species is similar to *Abietinaria amphora* Nutting, 1904 in the shape of hydrothecae, but the length of hydrothecal neck of this species is shorter than that of *A. amphora*. Regarding the gonothecae reported by Nutting(1904), the gonothecae of *A. traski* arranged in rows

on the face of the branches, oblong, without distinct pedicel or collar, surface smooth, while that of *A. amphora* born on the front of stem and proximal portion of the branches, usually crowded together in two rows, very large, oval, with long neck and round terminal aperture, provided with four or five strong crests running longitudinally from the neck to the base. They are clearly distinguished each other by the above characteristics. The type specimen from San Pedro, California has been deposited in the University of California.

Distribution: Korea, Japan, Bering Sea, Alaska, Canada, San Juan Isl., Puget Sound, California, Sidney Isl.

Genus 7. *Amphisbetia* L. Agassiz, 1862

Hydrocaulus monosiphonic, branched or unbranched. Hydrothecae opposite or subopposite or alternate, margin usually with two large teeth, sometimes with a small adcauline tooth, operculum with two flaps. Gonothecae oval-shaped, flattened and a large aperture on the distal portion.

21. *Amphisbetia pacifica* Stechow, 1931

Amphisbetia pacifica Stechow, 1931, (185-186); Stechow & Uchida, 1931, (563-565, fig. 11); Kamita & Sato, 1941, (2); Yamada, 1955, (19-20, fig. 3); 1959, (69); Ito & Inoue, 1962, (450-451, pl. 8, figs. 85-87); Rho, 1967, (356-358, fig. 19, a-b); 1969, (170-171); 1974, (141); Rho & Chang, 1972, (104); Kubota, 1978, (240, fig. 4, 16-17).

Specimen examined: Sŏgwip'o,(B.J.Rho), EWUHyd21730916, EWUHyd21730916, EWUHyd21790713, (J.I.Song), EWUHyd21820501; Hoedong, (B.J. Rho), EWUHyd21740805; Chŏpto,(B.J.Rho), EWUHyd21740806; Kyŏkp'o-ri, (B.J. Rho), EWUHyd21750807; Mokto, (S. Shin), EWUHyd21810722; Yejakto, (J.I. Song), EWUHyd21810723; Taech'ŏnhaesuyokchang, (J.H.Park), EWUHyd21840702. Intertidal zone.

Distribution: Korea, Japan.

Genus 8. *Sertularia* Linnaeus, 1758

Hydrocaulus monosiphonic, branched or unbranched. Hydrothecae opposite or subopposite or alternate, margin with two teeth or without teeth and operculum with two flaps or one flap.

Key to the species of *Sertularia*

A. Hydrothecal margin without teeth .... *Sertularia desmoides*
AA. Hydrothecal margin with teeth
B. Hydrothecal wall smooth
C. Each internode with several pairs of hydrothecae
D. Hydrothecae long, tubular-shaped .... *Sertularia distans*
DD. Hydrothecae short, barrel-shaped .... *Sertularia dalmasi*
CC. Each internode with one pair hydrothecae
D. Node on below hydrotheca .... *Sertularia hattorii*
DD. Node on above hydrotheca .... *Sertularia densa*
BB. Abcauline wall with heavy constriction .... *Sertularia turbinata*

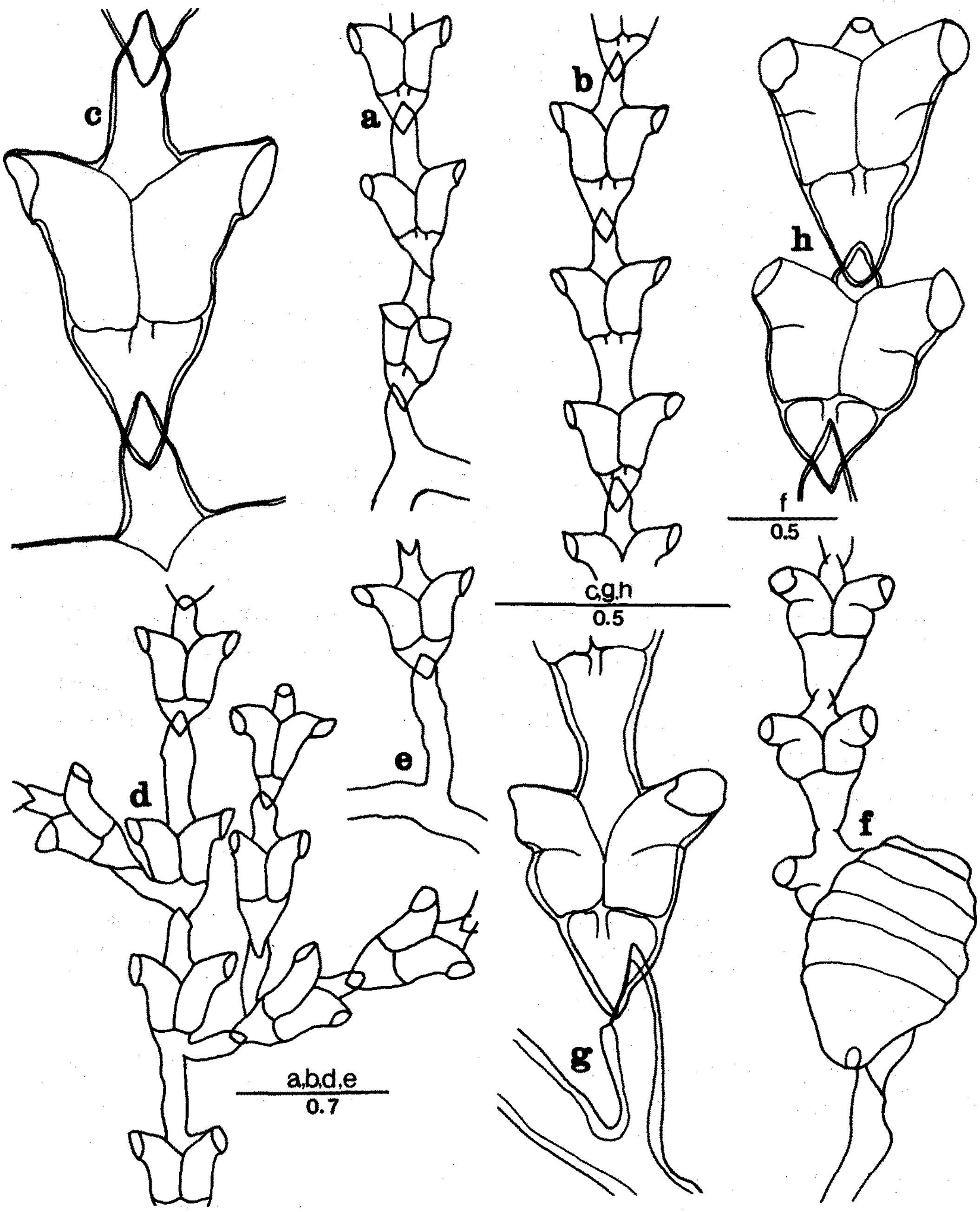


Fig. 6. a-e. *Sertularia desmoides:* a. basal portion of unbranched colony; b. middle portion of unbranched colony; c. enlarged paired hydrothecae; d. middle portion of colony with branches; e. basal portion of branched colony. f-h. *Sertularia turbinata:* f. basal portion of colony with gonotheca; g. enlarged basal portion of colony; h. enlarged apical portion of colony. Unit of each scale in millimeter.

22. *Sertularia desmoides Torrey, 1902 (Fig. 6, a-e, pl. 2, figs. c-d)

Sertularia desmoides: Nutting, 1904, (56-57, pl. 3, figs. 1-3); Bedot, 1925, (396); Fraser, 1937, (161-162, pl. 37, fig. 194, a-d); 1938a, (54); 1948b, (247-248).

Specimen examined: Anmyŏndo, (B.J. Rho), EWUHyd22730808; Mip'o, (B.J. Rho), EWUHyd-22760417; Taehŭksando,(J.H. Park), EWUHyd22780705; Hongdo, (B.J. Rho), EWUHyd22780720. Intertidal zone.

Description: Coloies slender, small and branched or unbranched. Hydrocaulus divided into irregular internodes, each internode with 1-5 hydrothecae. Hydrocladia arising from the hydrotheca, often branched. Hydrothecae opposite, tubular-shaped, the pairs constiguous in front, distal portion free and curved outward, margin without teeth, operculum with one flap. No gonothecae have been observed.

Measurement (in millimeters)	EWUHyd22730808
Hydrocaulus, length of internode	0.64- 3.88
idem, diameter at above the hydrotheca	0.09- 0.10
Hydrotheca, length of abcauline wall	0.21- 0.23
idem, length of fused adcauline wall	0.14- 0.20
idem, length of free adcauline wall	0.22- 0.27
idem, diameter at margine	0.11- 0.13
idem, diameter at base	0.09- 0.13
Length of colony	8.00-19.00

Remarks: The colonies of this species are irregular in growth. The one is branched irregularly and the other is unbranched. And internodes of stem and branch are also variable in length. The internodes of specimens of Nutting(1904) and Fraser(1937) are very long and slender, but those of our specimens are relatively short. The other characters are aggreement with those of Nutting(1904) and Fraser(1937). The gonosome has not been so far described by anyone since Torrey's (1902) description. According to Fraser's(1937) description cited from Torrey's one, gonothecae borne on stem, sessile, ovate with a wavy outline and broad round aperture, half as broad as long, single gonophore centrally placed, with coenosacal processes connecting it on all sides with gonothecal wall.

Distribution: Korea, California, Pacific coasts of Mexico, Newfoundland.

23. *Sertularia distans* (Lamouroux, 1816)

Dynamena distans Lamouroux, 1816, (180, tab. 5, fig. 1, a-b).

Sertularia distans: Allman, 1877, (25, pl. 16, figs 9-10); Bedot, 1905, (111); 1910, (368); Billard, 1907, (354-355); 1907, (354-355); 1909, (322); Ritchie, 1907, (404-505); Stechow, 1913b, (147-148, fig. 125); 1919, (94-96, fig. K); Jäderholm, 1919, (14); Leloup, 1938, (17); Vervoort, 1946, (318); Yamada, 1950, (355); Millard & Bouillon, 1974, (8); 1975, (2); Rho & Park, 1980, (10, pl. 5, figs. 8-9, pl. 6, figs. 1-2).

Tridentata distans: Hirohito, 1969, (23, fig. 16, a-b).

Specimen examined: Pŏmdo, (B.J. Rho), EWUHyd23710207; Sŏgwip'o, (B.J. Rho), EWUHyd23790712, (J.I. Song), EWUHyd23820522; Mip'o, (B.J. Rho), EWUHyd23740715. Intertidal zone.

Distribution: Korea, Japan, Bird Isl., Monaco, Mediterranean, Ponta Torres, Inhaca, Santa Carolina, Mozambique, Porto Grande.

24. *Sertularia dalmasi* (Versluys, 1899)

Desmoscyphus dalmasi Versluys, 1899, (38-40, figs. 7-8).

Sertularia dalmasi: Fraser, 1944, (280-281, pl. 60, fig. 267, a-e); Ree & Thursfield, 1964, (146); Rho, 1967, (15-16, fig. 18, a-c, pl. 1, fig. 8); Rho & Chang, 1972, (8); Vervoort, 1959, (279-281, fig. 38).

Specimen examined: Sŏgwip'o, (B.J. Rho), EWUHyd24730715, EWUHyd24750412; Hongdo, (B.J. Rho), EWUHyd24780720. Intertidal zone.

Distribution: Korea, Abrolhos Bank, Brazil, Scotia.

25. *Sertularia hattorii* Leloup, 1940

Sertularia hattorii Leloup, 1940, (3-8, fig. 3); Yamada, 1959, (71); Rho & Chang, 1972, (8, pl. 5, figs. 18-20); Rho, 1974, (12-23).

Specimen examined: Sŏgwip'o, (B.J. Rho), EWUHyd25731219. 10-50m, with fishing net.

Distribution: Korea, Japan.

26. *Sertularia densa* Stechow, 1919

Sertularia densa Stechow, 1919, (93-94, fig. J); Rho & Park, 1983, (43, pl. 4, figs. 2-5).

Specimen examined: Hoenggando, (B.J. Rho), EWUHyd26690809; Yŏsu, (B.J. Rho), EWUHyd-26730808; Chŏpto, (B.J. Rho), EWUHyd26740806; Piin, (B.J. Rho), EWUHyd26780813. Intertidal zone.

Distribution: Korea, Villefranche.

27. *Sertularia turbinata* (Lamouroux, 1816) (Fig. 6, f-h, pl. 2, fig. e)

Dynamena turbinata Lamouroux, 1816, (180).

Sertularia turbinata: Billard, 1909, (322); 1910, (190); Bedot, 1910, (378); 1912, (258-259); 1925, (408-409); Ritchie, 1910, (821-822); Stechow, 1913b, (145-146, figs. 119-120); Jäderholm, 1919, (14-15, pl. 3, fig. 8); Leloup, 1937b, (106); Fraser, 1944, (290-291, pl. 62, fig. 278, a-c); Millard, 1958, (197-199, fig. 88); 1964, (49-51); Millard & Bouillon, 1974 (8); Pennycuik, 1959, (198); Vervoort, 1959, (275-277, figs. 35-36); Yamada, 1959, (70).

Specimen examined: Yŏnhwado, (B.J. Rho), EWUHyd27780719. Intertidal zone.

Description: Colonies small and unbranched. Hydrocaulus divided into undistinct internodes, sometimes distal portion transformed into hydrorhiza, from which new colonies arising. Hydrothecae tubular-shaped, margin smooth or sinuous, adcauline wall with a heavy constriction and curved outward. Gonothecae arising from the base of colonies, relatively large, oval-shaped, gonothecal wall with distinct annulations and without pedicel.

Measurement (in millimeters)	EWUHyd27780719
Hydrocaulus, length of internode	0.46-0.57
idem, diameter at node	0.06-0.08
Hydrotheca, length of abcauline wall	0.18-0.19
idem, length of fused adcauline wall	0.13-0.19
idem, length of free adcauline wall	0.17-0.20
idem, diameter at margin	0.09-0.10
idem, diameter at base	0.10-0.11

Gonotheca, total length 0.69
idem, maximum diameter 0.58
Length of colony 6.00-8.00

Remarks: For the identification of this species we refered to mainly the descriptions and figures of Jäderholm(1919), Stechow(1913b), Vervoort(1959), Millard(1958) and Fraser(1944). Though the shape of hydrothecae of Millard(1958) and Vervoort(1959) makes a little differences from that of ours, those of Jäderholm(1919), Stechow(1913b) and Fraser(1944) agree well with that of our specimens. The hydrothecae of Millard(1958) and Vervoort(1959) are gently curved outward and marginal teeth more developed.

S. turbinata resembled *S. inflata* (Versluys) reported by Fraser(1944). But this species can be readily distinguished from that by only the colony structure which is branched. *S. turbinata* is uncommon species in the Korean waters.

Distribution: Korea, Japan, Java, Indonesia, Lingga-lingga Point, Bahamas, Caribbean Sea, Puerto Rico, Bermuda, Between Eleuthera and Little Cat Isl., Curtis, Dunwich.

Genus 9. *Thuiaria* Fleming, 1828

Hydrothecae arranged in two and three longitudinal rows, alternate or subopposite, adcauline wall almost entirely immersed, margin with two or three teeth. Gonothecae oval-shaped, with pointing processes on the shoulder.

Key to the species of *Thuiaria*

A. Successive hydrothecae distant to each other
  B. Hydrothecae arranged in two longitudinal rows
    C. Hydrotheca long tubular-shaped .... *Thuiaria suensoni*
    CC. Hydrotheca short tubular-shaped
      D. Hydrocladia long and slender .... *Thuiaria plumosa*
      DD. Hydrocladia short and stout
        E. Hydrocaulus without node .... *Thuiaria thuja*
        EE. Hydrocaulus with node
          F. Hydrocladia branched .... *Thuiaria argentea*
          FF Hydrocladia unbranched
            G. Hydrothecae subopposite .... *Thuiaria similis*
            GG. Hydrothecae opposite .... *Thuiaria articulata*
  BB. Hydrothecae arranged in two and three longitudinal rows
    C. Periderm thin .... *Thuiaria nuttingi*
    CC. Periderm thick .... *Thuiaria carica*
AA. Successive hydrothecae adjacent each other .... *Thuiaria cupressina*

28. *Thuiaria suensoni (Levinsen, 1912) (Fig. 7, a-c, pl. 2, fig. f)

Sertularia suensoni Levinsen, 1912, (300, pl. 4, figs. 16-20); Kudelin, 1914, (215-217, figs. 57-58); Yamada, 1959, (72).

Specimen examined: Aninjin, (B.J. Rho), EWUHyd28710808; Ch'uksan, (J.I. Song), EWUHyd-28771225. 30-100m, with fishing net.

Description: Colonies comparatively large, branched and slender. Hydrocaulus flexible, divided into regular internodes. Hydrocladia also divided into regular internodes, each internode with 7-8 hydrothecae. Hydrothecae arranged in subopposite, long tubular-shaped, margin with two teeth. No gonothecae have been observed.

Measurement (in millimeters)	EWUHyd28771225
Hydrocaulus, length of internode	1.80- 2.26
idem, diameter at node	0.19- 0.27

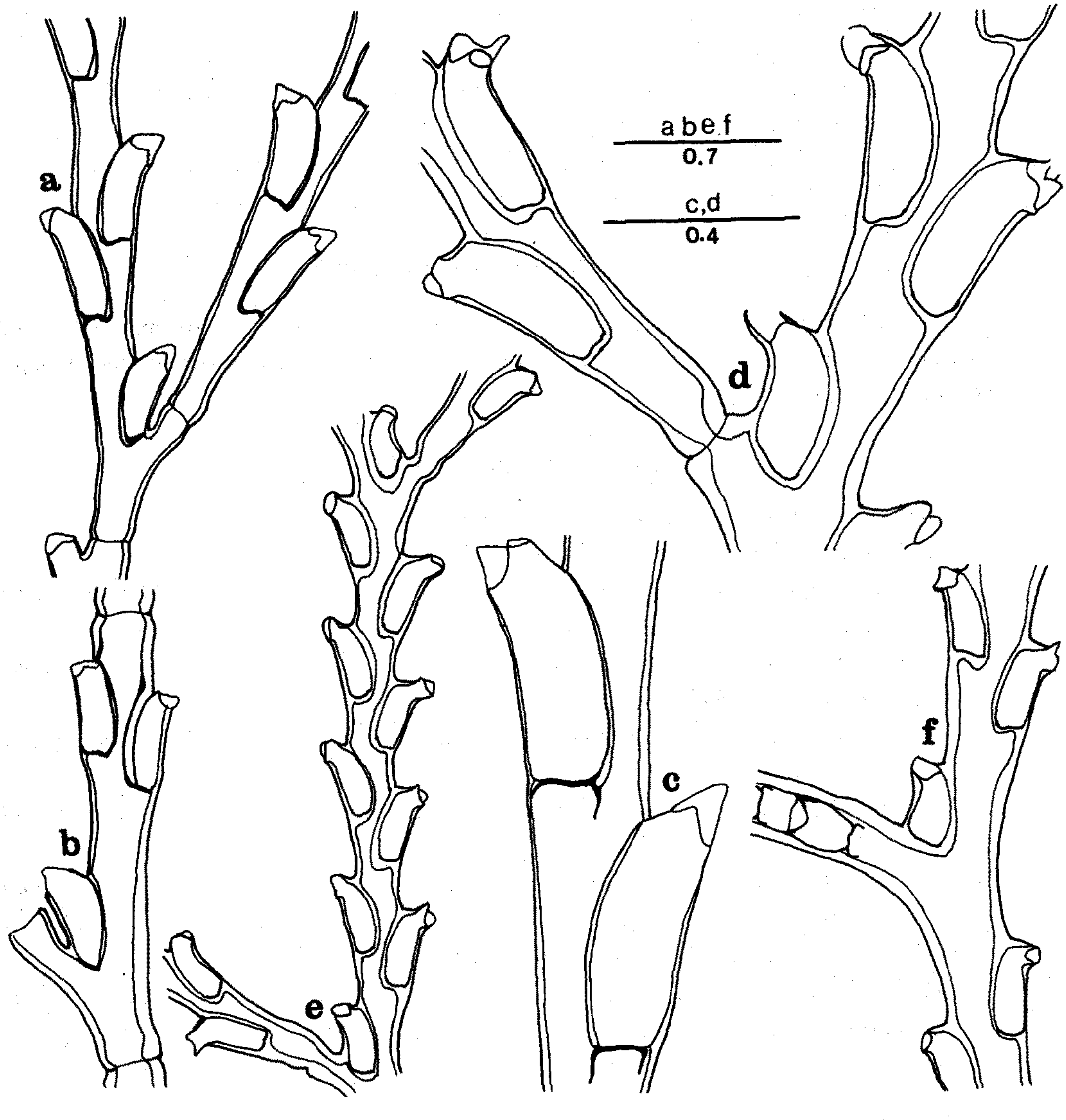


Fig. 7. a-c. *Thuiaria suensoni:* a. portion of dichotomous branch; b. portion of main *stem;*c. enlarged hydrothecae. d-f. *Thuiaria plumosa:* d. portion of dichotomous branch; e. apical portion of colony; f. portion of erect stem with branch. Unit of each scale in millimeter.

Hydrocladia, length of internode	2.23- 2.27
idem, diameter at node	0.05- 0.10
Hydrotheca, length of abcauline wall	0.22- 0.36
idem, length of fused adcauline wall	0.31- 0.40
idem, length of free adcauline wall	0.05- 0.11
idem, diameter at base	0.08- 0.11
Length of colony	90.00

Remarks: *T. suensoni* is uncommon boreal species and so far has been reported only in the Sea of Japan(32 N., 130 30′ E.). Though Levinsen(1912) placed it in the genus *Sertularia,* the shape of hydrothecae, especially adcauline wall entirely immersed, is the distinct characteristic of *Thuiaria.* So that we consider it is reasonable that *Sertularia suensoni* is sunk in the genus *Thuiaria.* Our specimens are in well agreement with that of Kudelin(1914) in the various characters.

Distribution: Korea, Sea of of Japan(42 N., 130 30′ E.,).

29. ***Thuiaria plumosa*** Clark, 1876 (Fig. 7, d-f, pl. 3, fig. a)

Thuiaria plumosa: Nutting, 1904, (74); Bedot, 1912, (380); 1918, (278), 1925, (447); Fraser, 1937, (170-171, pl. 39, fig. 206, a-b).

Sertularia plumosa: Kudelin, 1914, (260-265, pl. 2, fig. 10).

Specimen examined: Sŏgwip'o, (B.J. Rho), EWUHyd29790713.

Description: Hydrocaulus slender, light brown color and undivided into regular internodes. Hydrothecae arranged in subopposite, tubular-shaped, margin with two teeth, adcauline wall entirely immersed. No. gonothecae have been observed.

Measurement (in millimeters)	EWUHyd29790713.
Hydrocaulus, length between successive hydrocladia	1.25- 2.35
idem, diameter	0.22- 0.29
Hydrocladia, total length	16.00-30.00
idem, diameter	0.16- 0.21
Hydrotheca, length of abcauline wall	0.25-0.28
idem, length of adcauline wall	0.31- 0.32
idem, diameter at margin	0.26- 0.08
idem, diameter at base	0.10
Length of colony(fragment)	68.00

Remarks: The only one apical fragment of colony of this species was sampled from about 50m in depth with fishing net. But the colony structure reported by Kudelin(1914) are well agreement with that of our fragmental specimen. Especially the characteristic branchlets which are not extended to the end of the branches of our specimen don't make a question in identification. Though the stem of our specimen is not divided into internodes, that of Clark's(1876) specimen cited by Fraser(1937) was divided into irregular internodes. According to Fraser's(1937) description on gonosome cited from original description of Clark(1876), gonangia sessile, very long and narrow, tapering very gradually to the base, ornamented with two short horns placed on opposite sides of the orifice, near the distal end, orifice terminal, large, borne in single row on the upper side of the branches and branchlets.

Distribution: Korea, Icy Cape, Nunivak Isl., Bering Sea.

30. *Thuiaria thuja (Linnaeus, 1758) (Fig. 8, a-b, pl. 3, fig. b)

Sertularia thuja Linnaeus, 1758, (809).

Thuiaria thuja: Nutting, 9101, (363); 1904, (62-63, pl. 7, fig. 13); Bedot, 1905, (125); 1925, (450-451); Stechow, 1912, (361); 1925, (491); Kudelin, 1914, (293-303, pl. 3, fig. 6); Leloup, 1933,

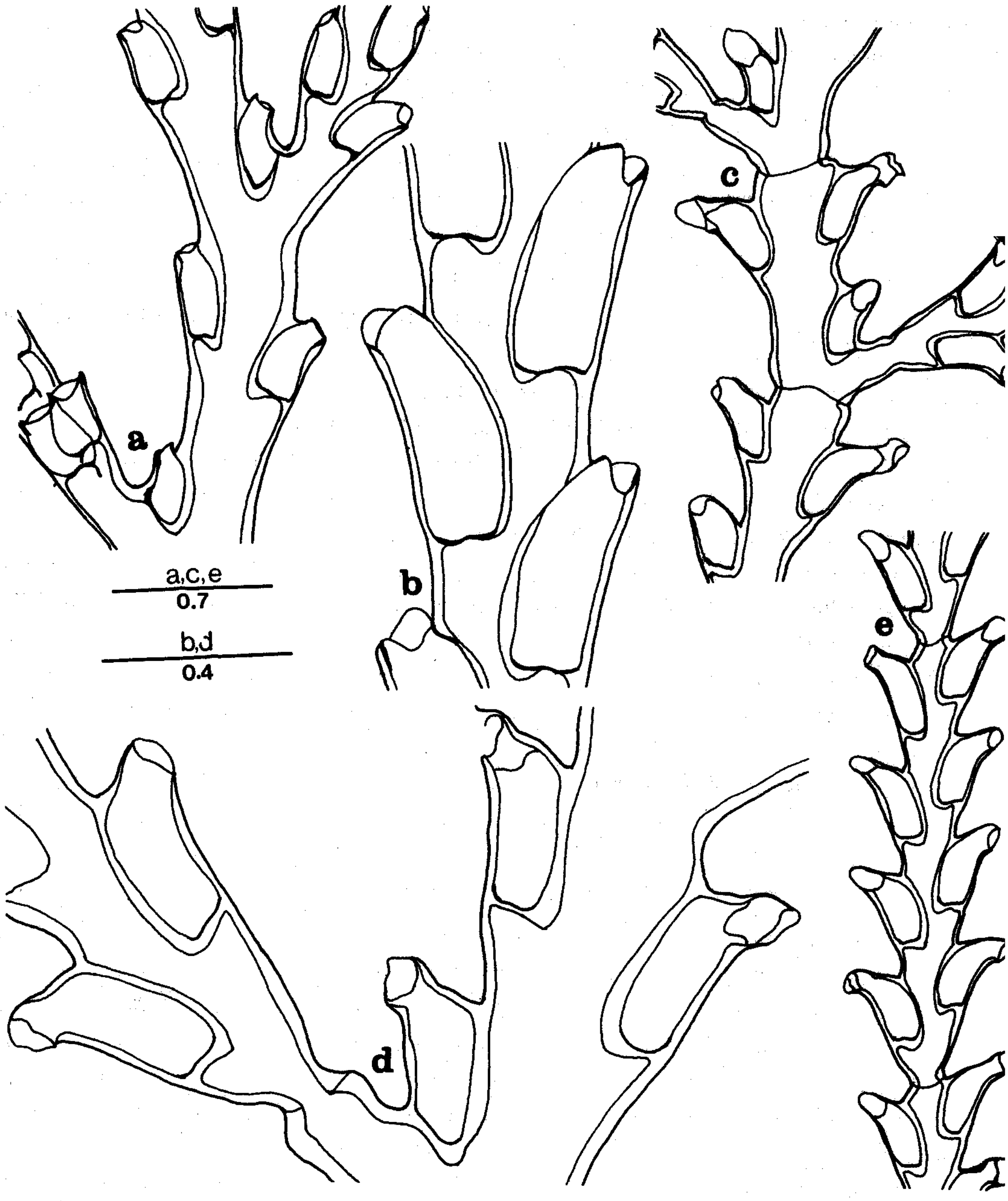


Fig. 8. a-b. *Thuiaria thuja:* a. portion of stem with branch; b. enlarged hydrothecae. c-e. *Thuiaria similis:* c. portion of stem with branches; d. enlarged stem and branch; e. portion of branch with hydrothecae. Unit of each scale in millimeter.

(25); Cunha, 1944, (57-58); Fraser, 1937, (173-174); 1944, (309-310, pl. 65, fig. 297); Hamond, 1957, (318); Calder, 1970, (1538, pl. 8, fig. 6); Vervoort, 1972, (185-186).

Salacia thuja: Ree & Thursfield, 1964, (151-152).

Specimen examined: Chakyakto, (B.J. Rho), EWUHyd30741214; Mip'o, (J.H. Park). EWUHyd-30820523. 30-100m, with fishing net.

Description: Colonies flexible and branched, light brown color. Hydrocaulus slender, undivided into internodes. Hydrocladia comparatively short, arranged in alternate below portion and distal portion in spiral. Hydrothecae subopposite, margin with two round teeth or smooth, operculum with one flap. No gonothecae have been observed.

Measurement (in millimeters)	EWUHyd30741214
Hydrocaulus, length between successive hydrocladia	0.19-2.70
idem, diameter	0.34-0.36
Hydrotheca, length of abcauline wall	0.26- 0.36
idem, length of adcauline wall	0.34- 0.40
idem, diameter at base	0.09- 0.11
Length of colony	85.00-150.00

Remarks: Though the specimens of Nutting(1904) and Fraser(1937) have no hydrothecal teeth, our specimens with round and obscure hydrothecal teeth agree with Calder's(1970) specimen. This species easily recognized by the stiff and short branches and characteristic frabellate structure of well developed colony. Basing on the distribution of this species reported by many workers, *T. thuja* can be characterized as a boreal, circumpolar species capable of penetrating into southern waters.

Distribution: Korea, Sea of Okhotsk, Bering Sea, Chukchi Sea, Barents Sea, White Sea, England, Portugal, Mediterranean, San Juan Isl., Northern Canada, Alaska, Banks Isl., Baffin Isl., Greenland, Iceland, Seven Isl., off Nantucket.

31. ***Thuiaria argentea*** (Linnaeus, 1758)

Sertularia argentea Linnaeus, 1758, (809); Kudelin, 1914, (165-172, fig. 25-28); Stechow, 1925, (532); Fraser, 1944, (293-295, pl. 62, Fig. 280, a-c); Ree & Thursfield, 1964, (145-146).

Thuiaria argentea: Nutting, 1901, (363, fig. 65); 1904, (71-72, pl. 12, figs. 3-9); Billard, 1904, (178); Bedot, 1905, (121-122); 1911, (220-221); 1912, (375); 1916, (242); Stechow, 1912, (361); 1919, (104); Fraser, 1937, (165-166, pl. 37, fig. 198); Rho & Park, 1980, (11, pl. 6, figs. 3-5).

Specimen examined: Mip'o, (B.J. Rho), EWUHyd31740512, EWUHyd31740712, EWUHyd-31761105, (J.I. Song), EWUHyd31810525, (J.H. Park), EWUHyd31831127; Oryukto, (B.J. Rho), EWUHyd31760418; Nohwado, (J.I. Song), EWUHyd31800820; Samch'onp'o, (J.H. Park), 31840820. 10-50m, with fishing net.

Distribution: Korea, Pacific and North Atlantic coasts of America.

32. ****Thuiaria nuttingi*** (Levinsen, 1912) (Fig. 10, a-b, pl. 3, fig. e)

Sertularia nuttingi Levinsen, 1912, (303, pl. 4, figs. 1-4); Kudelin, 1914, (217-218, figs. 59-60); Stechow, 1923a, (15); Yamada, 1959, (72).

Specimen examined: Yŏsu, (B.J. Rho), EWUHyd32690715; Pŏmdo, (B.J. Rho), EWUHyd-32710207; Mip'o, (B.J. Rho), EWUHyd32740716, EWUHyd32750511, EWUHyd32760418, (J.H. Park), EWUHyd32780428; Kuryongp'o, (B.J. Rho), EWUHyd32741225; Supto, (B.J. Rho), EWUHyd32750412. 30-100m, with fishing net.

Description: Hydrocaulus straight, brown color, undivided into regular internodes. Hydrocladiae arranged in regular interval, undivided into regular internodes and 3-6 hydrothecae between successive hydrocladiae. Hydrothecae generally arranged in two rows, sometimes three rows on the branch, subopposite, tubular-shaped, adcauline wall entirely immersed, margin with two lateral teeth. Gonothecae born on the hydrocladia, large, oval-shaped, with 6-8 pointing processes on the shoulder, with short neck and small aperture.

Measurement (in millimeters)	EWUHyd32780428
Hydrocaulus, diameter	0.27-0.35
Hydrocladia, total length	5.00-36.00
idem, diameter	0.16- 0.24
Hydrotheca, length of abcauline wall	0.23- 0.27
idem, length of adcauline wall	0.31- 0.33
idem, diameter at margin	0.06- 0.09
idem, diameter at base	0.08- 0.11
Gonotheca, total length	0.72- 0.78
idem, maximum diameter	0.30- 0.31
idem, length of process	0.08- 0.09
Length of colony	60.00-90.00

Remarks: The specimens of this species are abundant in the southern coasts of Korea. *T. nuttingi* has been reported by Levinsen(1912) from the Sea of Japan(33 10′ N., 129 18′ E.,) as *Sertularia nuttingi* (from Kudelin, 1914). But the colony structure and the shape of hydrothecae are the distinct characteristics of the genus *Thuiaria*. So that it is beyond a shadow of question that *S. nuttingi* is placed in the *Thuiaria*.

Distribution: Korea, Sea of Japan (33 10' N., 129 18' E.,), Japan.

33. *Thuiaria similis (Clark, 1876) (Fig. 8, c-e, pl. 3, fig. c)

Sertularia similis Clark, 1876, (219); Kudelin, 1914, (203-206, figs. 49-51); Calder, 1970, (1535-1536, pl. 7, fig. 10).

Thuiaria similis: Nutting, 1904, (69, pl. 10, figs. 7-9); Fraser, 1937, (172-173, pl. 39, fig. 208, a-d); 1944, (307-308, pl. 65, fig. 294, a-d); 1948b, (251).

Specimen examined: Sŏgwip'o, (B.J. Rho), EWUHyd33731019; Mip'o, (B.J. Rho), EWUHyd33760417; Samch'ŏnpo, (J.H. Park), EWUHyd33840722. 10-50m, with fishing net.

Description: Colonies plumula-shaped, very rigid and dark brown color. Hydrocaulus divided into irregular internodes, each internode with 3-11 hydrothecae. Hydrocladia also divided into irregular internodes, each internode with 2-10 hydrothecae. Hydrothecae arranged in subopposite, tubular shaped, below portion broader than distal portion, curved away outward, margin with two teeth, operculum with two flaps. No gonothecae have been observed.

Measurement (in millimeters)	EWUHyd33760417
Hydrocaulus, length of internode	0.98- 1.35
idem, diameter at node	0.38- 0.43
Hydrocladia, length of internode	2.15- 2.97
idem, diameter at node	0.11- 0.16
Hydrotheca, length of abcauline wall	0.24- 0.28

idem, length of fused adcauline wall	0.25- 0.30
idem, length of free adcauline wall	0.15- 0.18
idem, diameter at margine	0.09- 0.10
idem, diameter at base	0.12- 0.15
Length of colony	44.00-51.00

Remarks: Our specimens are well agreement with that of Nutting(1904) in various characters. Though the hydrocaulus of our specimens are divided into distinct regular internodes, that of Fraser's(1944) specimen is not divided and stout. *T. smilis* could be easily confused with *Sertularia schmidti* reported by Calder(1970). But the hydrothecae with relatively larger free portion of adcauline wall of *S. schmidti* is more slender.

Distribution: Korea, Japan, Sea of Okhotsk, Bering Sea, Alaska, Kodiak Isl., Northern Canada, North Atlantic coasts of America, Queensland.

34. ***Thuiaria articulata** (Pallas, 1766) (Fig. 9, a-c, pl. 3, fig. d)

Sertularia articulata Pallas, 1766, (133).

Thuiaria articulata: Stechow, 1913b, (152-154, figs. 131-134); Kudelin, 1914, (273-276, fig. 90); Bedot, 1925, (439-441).

Salacia articulata: Ree & Thursfield, 1964, (149).

Specimen examined: Supto, (J.I. Song), EWUHyd34830521. About 50m, with fishing net.

Description: Colonies dark brown color, rigid, unflexible and periderm thick. Hydrocaulus divided into long irregular internodes, each internode with 3-8 pairs hydrothecae. Hydrocladiae arising from the base of hydrothecae, opposite, divided into irregular internodes, each internode with 1-4 pairs hydrothecae. Hydrothecae arranged in opposite, tubular shaped, distal portion slightly curved outward, margin with three teeth. No gonothecae have been observed.

Measurement(in millimeters)	EWUHyd34830521
Hydrocaulus, length of internode	1.20- 2.45
idem, diameter at base	0.38- 0.47
Hydrocladia, length of internode	1.67- 2.35
idem, diameter at base	0.20- 0.31
Hydrotheca, length of abcauline wall	0.32- 0.35
idem, length of adcauline wall	0.45- 0.48
idem, diameter at base	0.12- 0.15
idem, maximum diameter	0.15- 0.19
Length of colony	45.00-55.00

Remarks: According to Nutting(1904), "Pallas(1766) gave the name *Sertularia articulata* to an Atlantic species under the mistaken impression that it was identical with the "Sea-Spleenwort" of Ellis. Afterwards Fleming(1842) erected the genus *Thuiaria* and apparently misled by Pallas, called the Spleenwort of Ellis *Thuiaria articulata.* In the meantime Ellis and Solander(1758) gave the name *Sertularia lonchitis* to Ellis's species of Sea-Spleenwort, thus securing the priority for the name *lonchitis,* which is essentially a northern form. Since that time most workers have confused the two species under the common name *Thuiaria articulata.*"This species was distinguished from *T. lonchitis* by the characteristic opposite arrangement of hydrocladiae and hydrothecae.

Distribution: Korea, Sea of Okhotsk, South Africa.

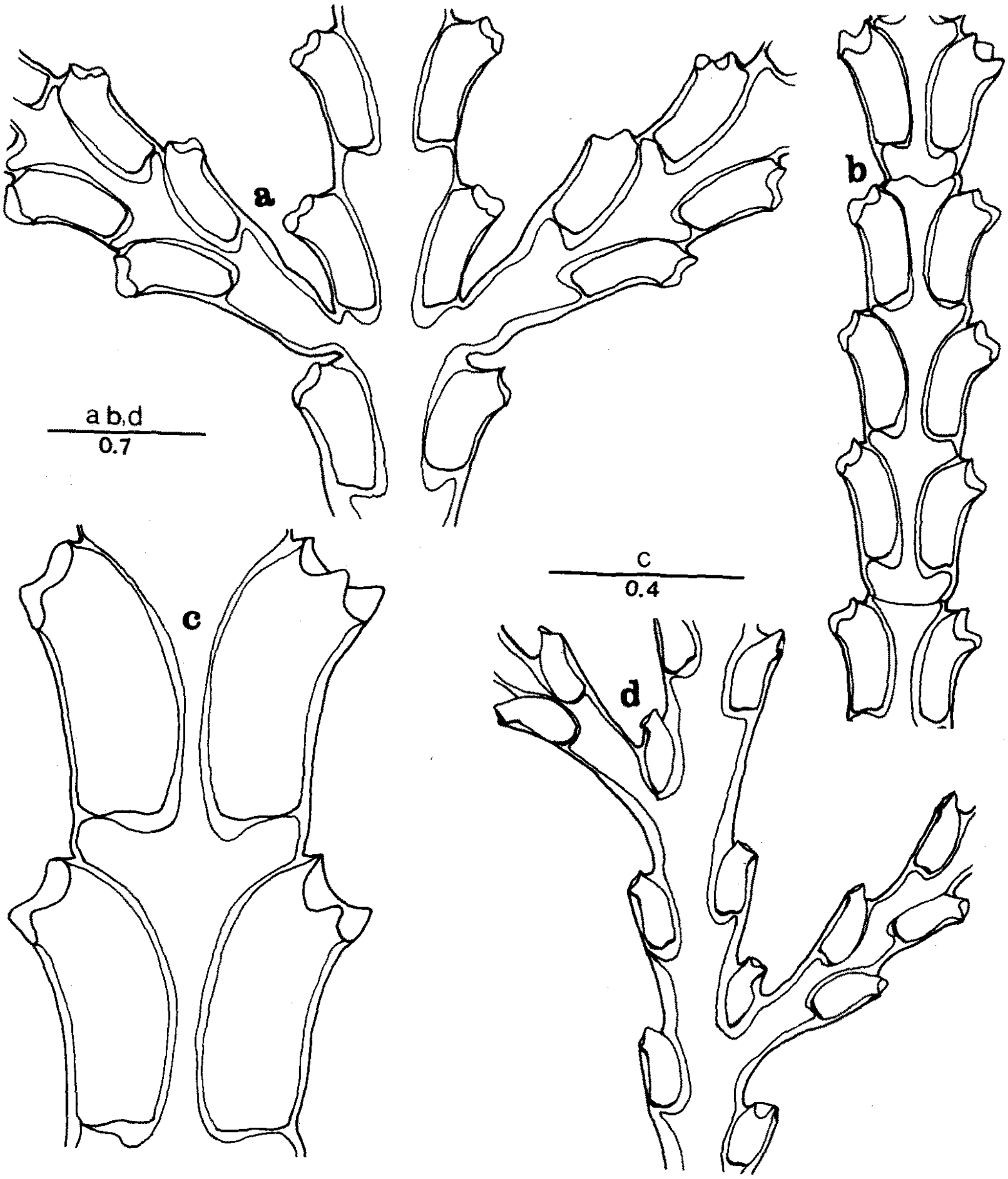


Fig. 9. a-c. *Thuiaria articulata:* a. portion of stem with branches; b. portion of branch; c. enlarged hydrothecae. d. *Thuiaria nuttingi:* portion of stem with branches. Unit of each scale in millimeter.

35. *Thuiaria carica Levinsen, 1893 (Fig. 10, c-e, pl. 3, fig. f)

Thuiaria carica: Broch, 1912, (17); Kudelin, 1914, (285-290, figs. 94-95); Fraser, 1937. (166, pl. 37, fig. 199, a-d); 1944, (296, pl. 62, fig. 281, a-d); Calder, 1970, (1537, pl. 8, fig. 3).

Specimen examined: Sŏgwip'o, (B.J.Rho), EWUHyd35711224; Kuryongp'o, (B.J.Rho), EWUHyd35741225. 30-40m, with fishing net.

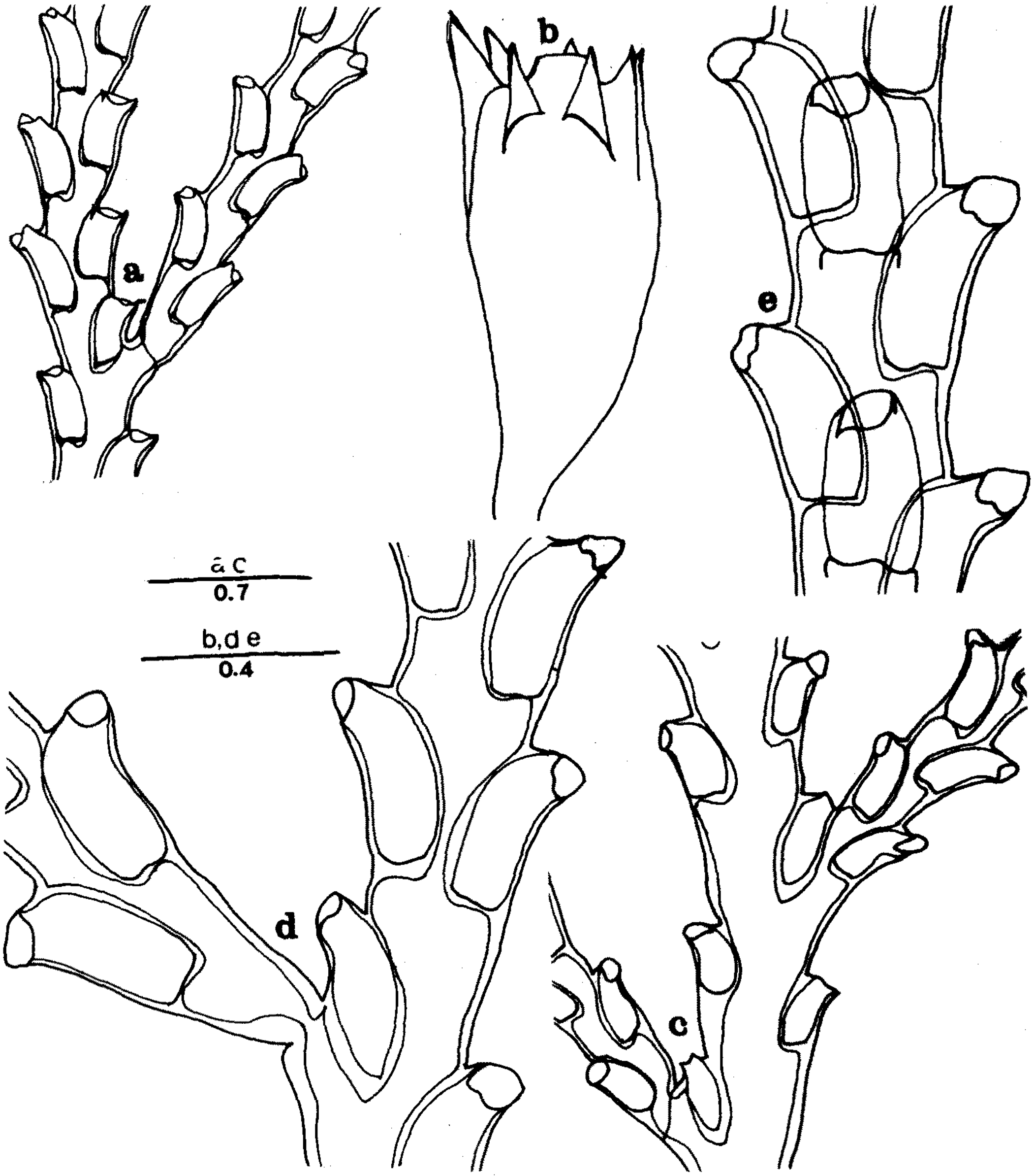


Fig. 10. a-b. *Thuiaria nuttingi:* a. portion of dichotomous branch; b. gonotheca. c-e. *Thuiaria carica:* c, portion of stem with branches; d. portion of dichotomous branch; e. enlarged hydrothecae. Unit of each scale in millimeter.

Description: Colonies brown color and unflexible. Hydrocaulus divided into long irregular internodes and rigid. Hydrocladiae arranged in alternate, not branched again, but a few hydrocladiae on the distal portion give rise to short branchlet. Hydrothecae arranged in subopposite, margin sinuous, operculum with one flap. No gonothecae have been observed.

Measurement(in millimeters)	EWUHyd35711224
Hydrocaulus, length of internode	7.05
idem, diameter at node	0.35- 0.37
Hydrotheca, length of abcauline wall	0.25- 0.29
idem, length of fused adcauline wall	0.30- 0.31
idem, length of free adcauline wall	0.09- 0.12
idem, diameter at base	0.08- 0.10
Length of colony	56.00-109.00

Remarks: The rigid stem and stiff branches are the characteristics of this species. The identification was mainly based on the works of Kudelin(1914) and Calder (1970). Our specimens are well in agreement with Kudelin's specimen in the shape and arrangement of hydrothecae and branching pattern. But sometimes the hydrothecae of our specimens are arranged in three rows on some branches. Fraser's (1944) specimen was differentiated from our specimens by complete alternate arrangement of hydrothecae. So that we have a question in the Fraser's identification.

Distribution: Korea, Japan, Sea of Okhotsk, Bering Sea, Chukchi Sea, Laptev Sea, Kara Sea, Barents Sea, White Sea, Norway, Iceland, Greenland, Northern Canada, Georgia Strait.

36. *Thuiaria cupressina* (Linnaeus, 1758)

Sertularia cupressina Linnaeus, 1758, (808); Kudeli, 1914, (172-176); Stechow, 1925, (143); Leloup 1933, (24); 1937a, (42-43, fig. 29); 1940, (18); 1947, (31); Vervoort, 1949, (153); 1972, (183); Hamond, 1957, (317).

Thuiaria cupressina: Allman, 1888, (67-68, pl. 32, fig. 1, a-c); Nutting, 1901, (364, fig. 66); 1904, (72-74, pl. 13, figs. 1-3); Billard, 1904, (147, 177); 1909, (320); 1916, (244-245); Fraser, 1944, (298-300, pl. 63, fig. 283, a-c); Rho & Park, 1980, (25-26, pl. 7, figs. 1-3).

Specimen examined: Och'ŏngdo, (B.J.Rho), EWUHyd36690531; Kyŏng-yŏlbiyŏldo, (B.J.Rho), EWUHyd36720418; Pusan, (J.I.Song), EWUHyd36810526; Anmyŏndo, (H.S.Kim), EWUHyd3620522. 10-50m, with fishing net.

Distribution: Korea, New Zealand, Pacific and Atlantic coasts of Canada, Barents Sea, Denmark, British coasts, Mediterranean.

Genus 10. *Selaginopsis* Allman, 1876

Hydrothecae arranged in more than longitudinal rows on the hydrocladiae. Gonothecae with processes on the shoulder or special marsupium.

Key to the species of *Selaginopsis*

A. Hydrothecae arranged in three rows on the hydrocladia
  B. Hydrocladia short, distal portion branched repeatedly
    C. Gonotheca eight short processes on the shoulder .... *Selaginopsis triserialis*
    CC. Gonotheca with special marsupium .... *Selaginopsis cornigera*

BB. Hydrocladia long, distal portion not branched more than one time .... *Selaginopsis trilateralis*

AA. Hydrothecae arranged in four rows on the hydrocladia .... *Selaginopsis pinnata*

37. *Selagonopsis triserialis Mereschkowsky, 1878 (Fig. 11, a-g, pl. 4, fig. a)

Selaginopsis triserialis Mereschkowsky, 1878, (435-436, pl. XVI, figs. 1-2); Bedot, 1912, (352);

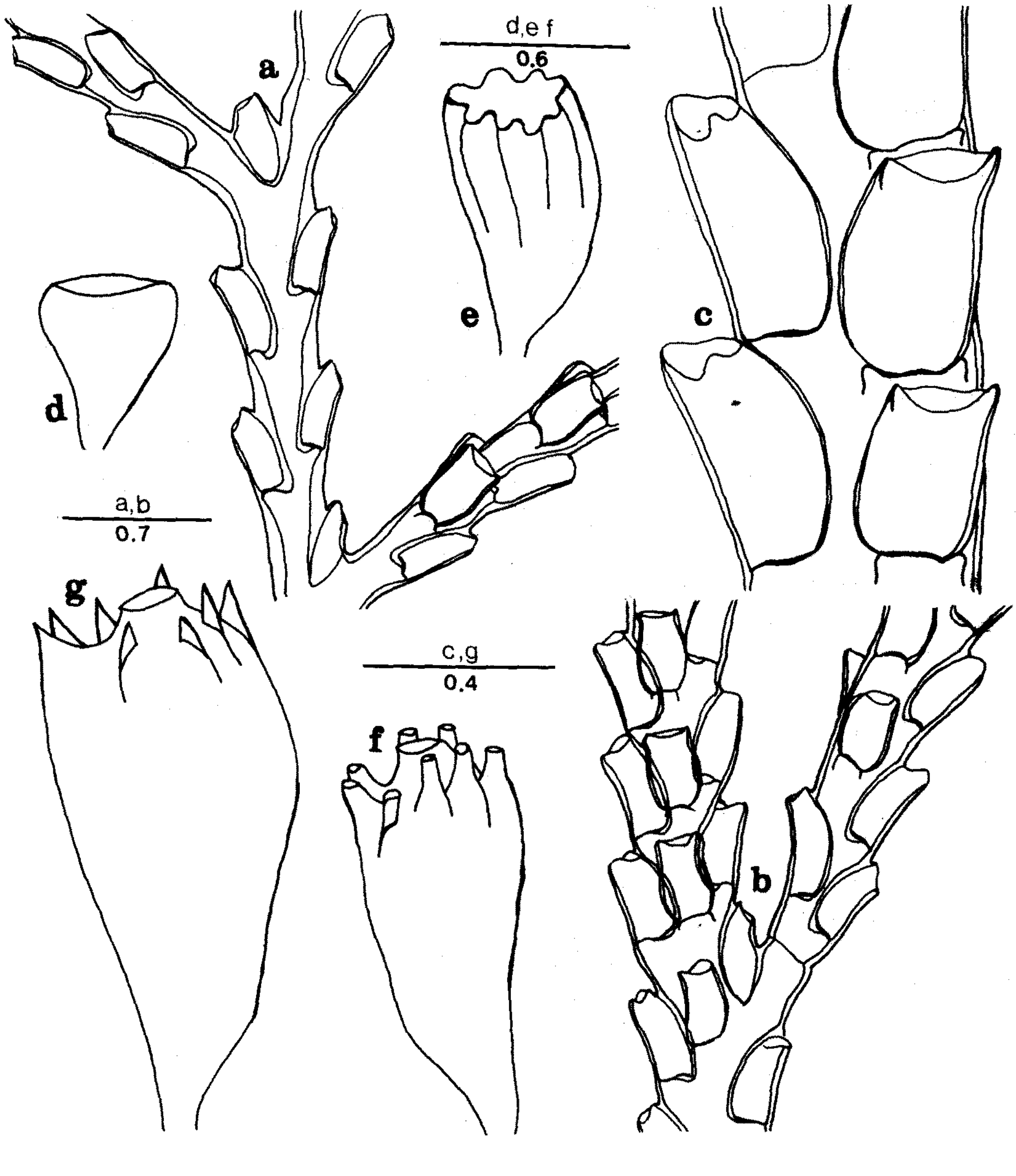


Fig. 11. a-g. *Selaginopsis triserialis:* a. portion of stem with branches; b. portion of dichotomous branch; c. enlarged hydrothecae; d-g. gonothecae. Unit of each scale in millimeter.

1916, (199); 1918, (234); 1925,(358); Stechow, 1923a, (17); Fraser, 1937, (148-149, pl. 33, fig. 175, a-c); Yamada, 1950, (16, pl. 1, fig. 20).

Specimen examined: Kyŏng-yŏlbiyŏldo, (B.J.Rho), EWUHyd37720418, Mip'o, (B.J.Rho), EWUHyd37740715; Taech'ŏnhaesuyokchang, (J.H.Park), EWUHyd37840702. 20-50m, with fishing net.

Description: Hydrocaulus flexible, undivded into internodes. Hydrocladiae arranged in alternate below portion, distal portion in spiral. Hydrothecae arranged in three longitudinal rows on the hydrocladia, subopposite, margin with two teeth. Gonothecae arising from the base of hydrothecae, long oval-shaped, with eight short, pointing processes on the shoulder, with short neck.

Measurement(in millimeters)	EWUHyd37720418
Hydrocaulus, length of between successive hydrocladia	1.50- 2.68
idem, diameter	0.32- 0.34
Hydrotheca, length of abcauline wall	0.29- 0.41
idem, diameter at margin	0.10- 0.12
idem, diameter at base	0.12- 0.15
idem, maximum diameter	0.16- 0.20
Gonotheca, total length	0.79- 0.99
idem, maximum diameter	0.37- 0.42
idem, length of process	0.07- 0.14
Length of colony	53.00-97.00

Remarks: This species can be easily recognized by the characteristic flexible stem and triserial arrangement of hydrothecae. Though the type specimen reported by Mereschkowsky(1878) from Kamtschatka was sterileand its hydrocaulus was divided into internodes, our specimens have abundant gonosomes and its hydrocauli and not divided. Besides these other characters of our specimens are well agreement with those of type specimen. Yamada have described in his work that the hydrothecae were arranged in three rows on the hydrocaulus and hydrocladia. We have a question in his description. The most species belonging to *Selaginopsis* have two longitudinal rows of hydrothecae on the hydrocaulus. Only on the hydrocladiae, the hydrothecae are arranged more than three longitudinal rows.

Distribution: Korea, Japan, Kamchatka, Sea of Okhotsk, Arctic Ocean, California, Alaska.

38. *Selaginopsis cornigera (Kudelin, 1914) (Fig. 12, a-e, pl. 4, fig. b)

Thuiaria cornigera Kudelin, 1914, (320-322, figs. 105-106).

Specimen examined: Yŏndo, (B.J. Rho). EWUHyd38720418; Songdo, (B.J. Rho), EWUHyd38720429; Chakyakto, (B.J. Rho), EWUHyd 38731214; Sangju-ri, (J.I. Song), EWUHyd 38810524; Pusan, (J.I.Song), EWUHyd38810526; Anmyŏndo, (H.S.Kim), EWUHyd38820522. 20-100m, with fishing net.

Description: Hydrocaulus divided into irregular internodes, each internode with 3-6 hydrocladiae. Hydrocladia undivided into internodes, arranged in alternate in the proximal portion and in spiral in the distal portion. Hydrothecae three longitudinal rows on the hydrocladia, flask-shaped, margin with two teeth. Gonothecae arising from the hydrocladiae on the distal portion of colony, conical shaped, with the characteristic marsupium consisted of several bifurcated long pointed gonangial leaves

Measurement(in millimeters)	EWUHyd38820522
Hydrocaulus, diameter	0.45- 0.48

Hydrocladia, total length	22.00-27.00
idem, diameter	0.31- 0.40
Hydrotheca, length of abcauline wall	0.24- 0.29
idem, length of adcauline wall	0.31- 0.38
idem, diameter at base	0.09- 0.14

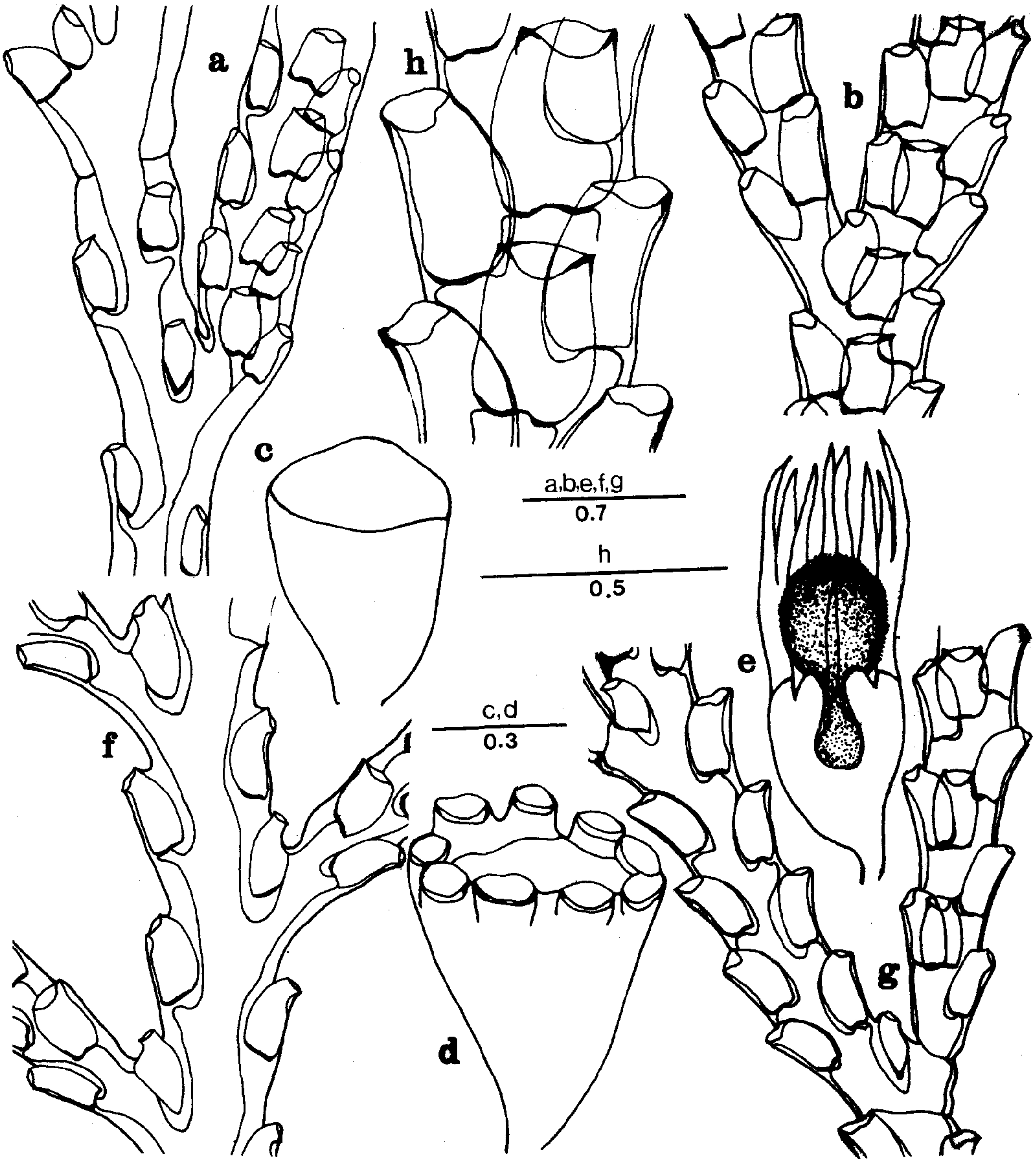


Fig. 12. a-e. *Selaginopsis cornigera:* a, portion of stem with branch; b, portion of dichotomous branch; c-e, gonothecae. f-h. *Selaginopsis trilateralis:* f, portion of stem with branches; g, portion of dichotomous branch; h, enlarged hydrothecae. Unit of each scale in millimeter.

Gonotheca, total length	0.49- 0.54
idem, maximum diameter	0.34- 0.42
idem, length of gonangial leaf	0.45- 0.82
Length of colony	70.00-141.00

Remark: This species has been reported by Kudelin(1914) from Kamchatka as *Thuiaria cornigera.* But the three longitudinal rows of hydrothecae on the hydrocladiae are the unique character of *Selaginopsis.* So that we consider *Selaginopsis* is more reliable than *Thuiaria.* The shape of gonothecae having the characteristic brooding chamber of our specimens is remarkable and well agrees with that of type specimen. Though *S. cornigera* is similar with *Selaginopsis triserialis* reported by Mereschkowsky(1878) in the colony structure and the shape of hydrothecae, this species can be distinguished from the latter by the shape of gonothecae.

Distribution: Korea, Kamchatka.

39. ****Selaginopsis trilateralis* Fraser, 1936 (Fig. 12, f-h, pl. 4, fig. c)

Selaginopsis trilateralis: Fraser, 1937, (148, pl. 33, fig. 174, a-b)

Specimen examined: Yokchido, (B.J.Rho), EWUHyd39680606; Yŏsu, (B.J.Rho), EWUHyd39730808, Kuryongp'o, (B.J.Rho), EWUHyd39741225; Mip'o, (B.J.Rho), EWUHyd39750202; Sangju-ri, (J.I.Song), EWUHyd39810523, (J.H.Park), EWUHyd39830714. 20-100m, with fishing net.

Description: Colonies feather shaped, light brown color, unflexible, periderm very thick. Hydrocaulus undivided into internodes, with 2-3 hydrothecae between the successive hydrocladiae and without hydrocladiae on the proxial portion. Hydrocladiae alternate, also undivided into internodes. Hydrothecae three longitudinal rows on the hydrocladiae, below portion broader than above, about one-fifth of adcauline wall free, margin with two teeth, operculum with two flaps. No gonothecae have been observed.

Measurement(in millimeters)	EWUHyd39750202
Hydrocaulus, diameter	0.36- 0.45
Hydrocladia, total length	18.00-30.00
idem, diameter	0.28- 0.35
Hydrotheca, length of abcauline wall	0.26- 0.28
idem, length of adcauline wall	0.31- 0.33
idem, diameter at margin	0.06- 0.08
idem, diameter at base	0.09- 0.13
Length of colongy	46.00-115.00

Remarks: Though our specimens are sterile and the length of colony (70-141mm) is larger than the specimen reported by Fraser(1937), the shape of hydrothecae, branching pattern and three rows of hydrothecae on the hydrocladiae are well agreement with those of his specimen. This species is similar with *Thuiaria nuttingi* reported by Kudelin(1914) in the shape of hydrothecae. But *S. trilateralis* is distiguished from *T. nuttingi* by the colony structure and the three longitudinal rows of hydrothecae on the hydrocladiae.

Distribution: Korea, California, Rose Harbor, Houston Stewart.

40. *Selaginopsis pinnata Mereschkowsky, 1878 (Fig. 13, a-b, pl. 4, fig. d)

Selaginopsis pinnata Mereschkowsky, 1878, (436-437, pl. XVI, figs. 3-4); Nutting, 1904, (130-131, pl. 39, fig. 6); Stechow, 1923a, (16); Bedot, 1925, (357); Fraser, 1937, (147-148, pl. 32, fig. 173, a-b); Yamada, 1959, (357).

Thuiaria pinnata: Kudelin, 1914, (329-331, fig. 108).

Specimen examined: Sorae, (C.K.Park), EWUHyd40711009; Sangju-ri, (J.H.Park), EWUHyd40830714. 10-50m, with fishing net.

Description: Colonies dark brwon color, rigid and feather shaped. Hydrocaulus divided into distinct internodes, each internode with 2-7 hydrocladiae. Hydrocladiae arranged in alternate, undivided into internodes. Hydrothecae arranged in four longitudinal rows on the hydrocladiae, margin sinuous or round, about one-fifth of adcaline wall free and curved outward. No gonothecae have been observed.

Measurement(in millimeters)	EWUHyd40711009
Hydrocaulus, length of internode	1.36- 3.66
idem, diameter at node	0.30- 0.35
Hydrotheca, length of abcauline wall	0.21- 0.25
idem, length of fused adcauline wall	0.23- 0.26
idem, length of free adcauline wall	0.04- 0.06
idem, diameter at base	0.07-0.09
Length of colony	47.00-58.00

Remarks: The type specimen reported by Mereschkowsky(1878) from Port Ajan is sterile and taller than our specimens. But our specimens are well agreement with type specimen in the four

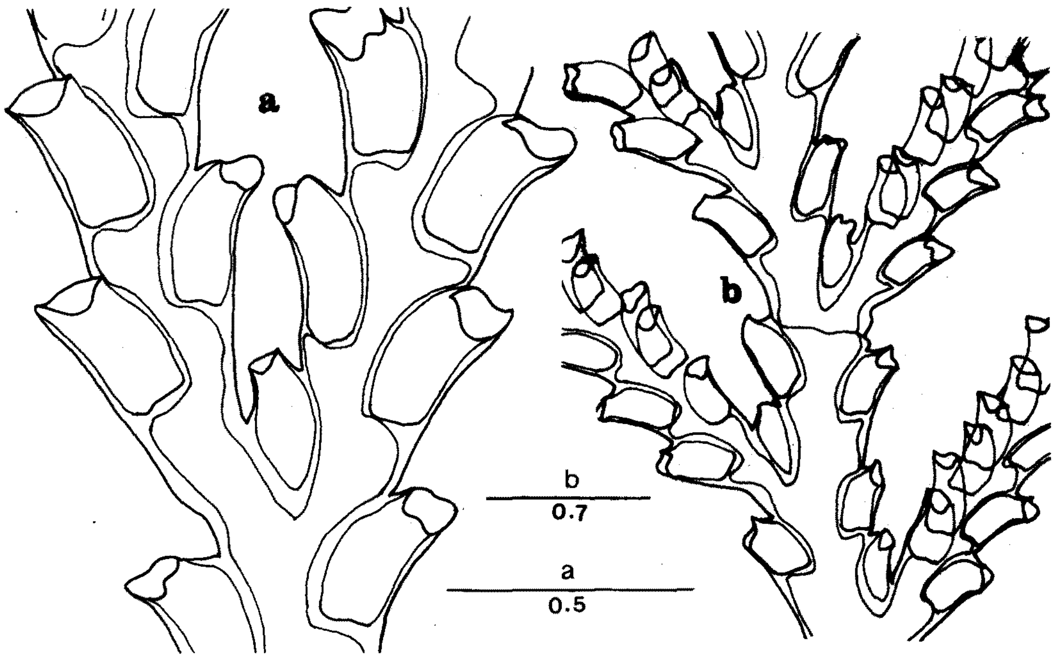


Fig. 13.a-b. *Selaginopsis pinnata:* a. portion of dichotomous branch; b. portion of stem with branch. Unit of each scale in millimeter.

longitudinal rows of hydrothecae on the hydrocladiae and thin, continuous layer form of hydrorhiza. This species is similar with *Thuiaria carica* Levinsen, 1893 reported by Kudelin(1914) in the colony structure, but *S. pinnata* is distinguished from the latter by the four longitudinal rows of hydrothecae on the hydrocladiae.

Distribution: Korea, Sea of Okhotsk, Bering Sea, San Juan Isl., Pacific coasts of Canada, St. Pauls Isl.

DISCUSSION

A total of 40 identified sertularian hydroid species in this work are belonging to 10 genera(*Diphasia, Dynamena, Pasythea, Symplectoscyphus, Sertularella, Abietinaria, Sertularia, Thuiaria* and *Selaginopsis*), two subfamilies(Sertomminae and Sertulariinae). Of which 21 species are newly recorded and the remaining 19 species have been previously known in Korean waters. Unfortunately we could not examine the only one species *Sertularella areyi* Nutting, 1904 reported by Rho(1974) from Sŏgwip'o(Chejudo), which is uncommon species in Korean waters.

The majority of the species belonging to the six genera(*Dynamena, Pasythea, Symplectoscyphys, Sertularella, Amphisbetia* and *Sertularia*) occur in the shallow waters and the others are known from the depth between 10-100m. These remarks relate only to the specimens identified from Korean waters.

For the geographical analysis, the authors divided the coastal waters of Korea into three regions (the East Sea, the South Sea and the Yellow Sea) on the basis of the geographical distribution and community coefficient. And also the new localities of 40 sertularian species are added to the previous known localities(Rho, 1967, 1969, 1974; Rho & Chang, 1972; Rho & Park, 1980, 1983) (Table 1). Seven of 41 species(including *Sertularella areyi*) are widespread Korean sertularian hydroids, 10 species are shared in the East Sea and the South Sea, 22 species in the South Sea and the Yellow Sea, and seven species in the East Sea and the Yellow Sea. Concerning the number of species of each region, 11 species occur the East Sea, 39 species in the South Sea and 23 species in the Yellow Sea (Table 2).

The community coefficient(r) between two regions of Korean waters can be calculated by the following equation:

$$r = C/\sqrt{S_1 \cdot S_2} \qquad \text{(Kim et al., 1970)}$$

C: the number of common species which occurred both corresponding regions simultaneously.

S_1, S_2 : the total number of species occurred in each region of pair.

The community coefficient of the East Sea-the South Sea is 0.476, that of the South Sea-the Yellow Sea 0.733 and that of the East Sea-the Yellow Sea 0.438. So that the zoogeographical relationship between the South Sea and the Yellow Sea is higher than that of the South Sea and the East Sea by a great deal (Table 2).

Of 41 species *Sertularella miurensis* appeared as a dominant sertularian species in Korean waters which was collected from 35 out of 71 localities. This species was originally reported by Stechow(1921) from Japan, and so far was known only from the coasts of Korea and Japan. Besides, the 24 species are also shared with Japan, of which 15 species were found from the other regions of the world.

Table 1. Distribution of the Korean sertularian hydroids in Korean waters and worldwide

Region: East Sea

Species \ Locality	Sokchʻo	Naksan	Kangnŭng	Aninjin	Kŭndŏkhaesuyokchang	Todong	Chʻuksan	Pohang	Kuryongpo	Mopo	Kampo
1. *Diphasia palmata*											
2. *Dynamena crisioides*											
3. *D. cornicina*											
4. *Pasythea nodosa*									X		
5. *Symplectoscyphus hozawai*						X	X	X			
6. *Sertularella distans*											
7. *S. tongensis*											
8. *S. levigata*		X						X			
9. *S. robusta*											
10. *S. solidula*											
11. *S. quinquelaminata*											
12. *S. lagenoides*	X										
13. *S. obtusa*											
14. *S. miurensis*	X				X	X	X		X	X	
15. *S. tenella*											
16. *S. areyi*											
17. *S. sinensis*											
18. *S. gotoi*						X					
19. *S. pedrensis*											
20. *S. gayi*											
21. *Abietinaria traski*											

Region: South Sea (continued)

Species \ Locality	Mipo	Haeundae	Pusan	Oryukto	Changsŭngpo	Kujora	Yundoldo	Hongdo	Chʻŏngsa	Pijindo	Yŏnhwado	Yokchido	Shinsudo	Samchʻŏnpo	Nŭkto	Mijodo	Mijo-ri	Sangju-ri	Nodo	Mokto	Kaldo	Pangjukpo
1. *Diphasia palmata*	X																					
2. *Dynamena crisioides*		X			X		X			X	X					X		X			X	X	
3. *D. cornicina*	X																					
4. *Pasythea nodosa*	X																X				X	
5. *Symplectoscyphus hozawai*	X										X											X
6. *Sertularella distans*																						
7. *S. tongensis*									X													
8. *S. levigata*	X	X							X					X			X	X	X			X
9. *S. robusta*																						
10. *S. solidula*												X										
11. *S. quinquelaminata*													X				X					X
12. *S. lagenoides*							X			X							X					
13. *S. obtusa*																						
14. *S. miurensis*	X	X				X			X	X	X					X		X		X	X	X
15. *S. tenella*	X																					
16. *S. areyi*																						
17. *S. sinensis*	X		X																			
18. *S. gotoi*	X																					
19. *S. pedrensis*																						
20. *S. gayi*																						
21. *Abietinaria traski*																						

Region: South Sea (continued)

Species \ Locality	Tolsando	Yŏsu	Odongdo	Kŏmundo	Shinhŭng-ri	Tochʻŏng-ri	Wando	Yŏsŏdo	Nohwado	Yesong-ri	Yejakto	Hoenggando	Chʻujado	Chejuhang	Udo	Sŏngsanpo	Wimi-ri	Pomong-ri	Sŏgwipo	Supto	Mundo	Pŏmdo
1. *Diphasia palmata*																		X	X	X		
2. *Dynamena crisioides*		X		X	X		X						X		X	X			X			
3. *D. cornicina*																						
4. *Pasythea nodosa*				X															X		X	
5. *Symplectoscyphus hozawai*											X								X	X		
6. *Sertularella distans*																			X			
7. *S. tongensis*																					X	
8. *S. levigata*	X	X	X	X						X						X	X		X	X		
9. *S. robusta*				X	X											X						
10. *S. solidula*				X	X					X									X			
11. *S. quinquelaminata*				X															X			
12. *S. lagenoides*				X									X			X			X			
13. *S. obtusa*																			X			
14. *S. miurensis*	X	X	X	X				X								X	X		X			X
15. *S. tenella*																						X
16. *S. areyi*																			X			
17. *S. sinensis*		X				X								X					X	X		X
18. *S. gotoi*		X				X													X			
19. *S. pedrensis*									X													
20. *S. gayi*																						
21. *Abietinaria traski*																			X			X

Region: Yellow Sea; Total; Worldwide

Species \ Locality	Chʻŏpto	Hoedong	Nokchin	Taehŭksando	Taedundo	Komso	Kyŏkpo-ri	Yŏndo	Ŏchʻŏngdo	Piin	Taechʻŏnhaesuyokchang	Anmyŏndo	Kyŏng-yŏlbiyŏldo	Sorae	Songdo	Chakyakto	Total no. of locality (71)	Worldwide: Japan	Worldwide: Other region
1. *Diphasia palmata*												X					5	X	X
2. *Dynamena crisioides*	X	X		X													20	X	X
3. *D. cornicina*																	1	X	X
4. *Pasythea nodosa*	X																8	X	X
5. *Symplectoscyphus hozawai*	X	X		X	X					X							14	X	
6. *Sertularella distans*																	1		X
7. *S. tongensis*																	2		X
8. *S. levigata*		X	X						X	X		X		X			25	X	
9. *S. robusta*																X	4		X
10. *S. solidula*				X			X										7	X	
11. *S. quinquelaminata*	X			X													7	X	
12. *S. lagenoides*				X	X											X	11		X
13. *S. obtusa*		X		X								X					4	X	
14. *S. miurensis*	X	X		X		X	X		X	X	X	X					35	X	
15. *S. tenella*								X								X	4	X	X
16. *S. areyi*																	1	X	X
17. *S. sinensis*																	8	X	
18. *S. gotoi*												X					6	X	
19. *S. pedrensis*																	1		X
20. *S. gayi*																X	1	X	X
21. *Abietinaria traski*																	2	X	X

Region	East Sea										
Locality / Species	Sokchŏ	Naksan	Kangnŭng	Aninjin	Kŭndŏkhaesuyokchang	Todong	Chuksan	Pohang	Kuryongpo	Mopo	Kampo
2. *Amphisbetia pacifica*									X	X	
3. *Sertularia desmoides*											
4. *S. distans*											
5. *S. dalmasi*											
6. *S. hattorii*											
7. *S. densa*											
8. *S. turbinata*											
9. *Thuiaria suensoni*				X			X				
0. *T. plumosa*											
1. *T. thuja*											
2. *T. argentea*											
3. *T. nuttingi*									X		
4. *T. similis*											
5. *T. articulata*											
6. *T. carica*									X		
7. *T. cupressina*											
8. *Selaginopsis triserialis*											
9. *S. cornigera*											
0. *S. trilateralis*									X		
1. *S. pinnata*											

Region	South Sea																					
Locality / Species	Mipo	Haeundae	Pusan	Oryukto	Changsŭngpo	Kujora	Yundoldo	Hongdo	Chŏngsa	Pijindo	Yŏnhwado	Yokchido	Shinsudo	Samchŏnpo	Nŭkto	Mijodo	Mijo-ri	Sangju-ri	Nodo	Mokto	Kaldo	Pangjukpo
2. *Amphisbetia pacifica*								X	X								X			X	X	X
3. *Sertularia desmoides*	X							X														
4. *S. distans*	X							X													X	
5. *S. dalmasi*								X														
6. *S. hattorii*																						
7. *S. densa*																						
8. *S. turbinata*											X											
9. *Thuiaria suensoni*																						
0. *T. plumosa*																						
1. *T. thuja*	X																					
2. *T. argentea*	X			X										X								
3. *T. nuttingi*	X																					
4. *T. similis*	X													X								
5. *T. articulata*																						
6. *T. carica*																						
7. *T. cupressina*			X																			
8. *Selaginopsis triserialis*	X																					
9. *S. cornigera*			X															X				
0. *S. trilateralis*	X											X						X				
1. *S. pinnata*																		X				

Region	South Sea																					
Locality / Species	Tolsando	Yŏsu	Odongdo	Kŏmundo	Shinhŭng-ri	Tochŏng-ri	Wando	Yŏsŏdo	Nohwado	Yesong-ri	Yejakto	Hoenggando	Chujado	Chejuhang	Udo	Sŏngsanpo	Wimi-ri	Pomong-ri	Sŏgwipo	Supto	Mundo	Pŏmdo
2. *Amphisbetia pacifica*	X	X		X							X						X		X	X		
3. *Sertularia desmoides*																						
4. *S. distans*																			X			X
5. *S. dalmasi*				X												X	X		X			
6. *S. hattorii*												X							X			
7. *S. densa*		X	X									X										
8. *S. turbinata*																						
9. *Thuiaria suensoni*																						
0. *T. plumosa*																			X			
1. *T. thuja*																						
2. *T. argentea*									X													
3. *T. nuttingi*		X																		X		X
4. *T. similis*																			X			
5. *T. articulata*																				X		
6. *T. carica*																			X			
7. *T. cupressina*																						
8. *Selaginopsis triserialis*																						
9. *S. cornigera*																						
0. *S. trilateralis*		X																				
1. *S. pinnata*																						

Region	Yellow Sea																Total no. of locality	Worldwide	
Locality / Species	Chŏpto	Hoedong	Nokchin	Taehŭksando	Taedundo	Komso	Kyŏkpo-ri	Yŏndo	Ŏchŏngdo	Piin	Taechŏnhaesuyokchang	Anmyŏndo	Kyŏng-yŏlbiyŏldo	Sorae	Songdo	Chakjakto	71	Japan	Other region
2. *Amphisbetia pacifica*	X	X					X				X	X					20	X	
3. *Sertularia desmoides*				X								X					4		X
4. *S. distans*																	5	X	X
5. *S. dalmasi*										X							6		X
6. *S. hattorii*																	2	X	
7. *S. densa*	X									X							5		X
8. *S. turbinata*																	1	X	X
9. *Thuiaria suensoni*																	2		X
0. *T. plumosa*																	1		X
1. *T. thuja*																X	2		X
2. *T. argentea*																	4		X
3. *T. nuttingi*																	5	X	X
4. *T. similis*																	3	X	X
5. *T. articulata*																	1	X	X
6. *T. carica*																	2	X	X
7. *T. cupressina*									X			X	X				4		X
8. *Selaginopsis triserialis*											X		X				3	X	X
9. *S. cornigera*								X				X			X	X	6		X
0. *S. trilateralis*																	5		X
1. *S. pinnata*														X			3		X

Table 2. Number of species occurring in one region and both regions of every pair of three rigions (shown in the cells above the diagonal line) and community coefficient(r) between two regions(shown in the cells bellow the diagonal line)

	East Sea	South Sea	Yellow Sea
East Sea	11	10	7
South Sea	0.476	39	22
Yellow Sea	0.438	0.733	23

SUMMARY

The known Korean sertularian hydroid fauna consists of 41 species(including *Sertularella areyi* reported by Rho, 1974) of 10 genera in two subfamilies. Of which 20 species have been previously known and the following 21 species are newly recorded in Korean waters (*Dynamena cornicina, Sertularella distans, Sertularella tongensis, Sertularella obtusa, Sertularella tenella, Sertularella pedrensis, Sertularella gayi, Abietinaria traski, Sertularia desmoides, Sertularia turbinata, Thuiaria suensoni, Thuiaria plumosa. Thuiaria thuja, Thuiaria nuttingi, Thuiaria similis, Thuiaria articulata, Thuiaria carica, Selaginopsis triserialis, Selaginopsis cornigera, Selaginopsis trilateralis and Selagiopsis pinnata*). They were sampled from the depths below 100m.

Of 41 species *Sertularellla miurensis* is the most common species and 10 species, *Dynamena cornicina, Sertularella distans, Sertularella lagenoides, Sertularella areyi, Sertularella pedrensis, Sertularella gayi, Sertularia hattorii, Sertularia turbinata, Thuiaria plumosa* and *Thuiaria articulata* are scarcesly founded in Korean waters.

25 out of 41 species are shared with Japan and the remaining 16 species so far have been unknown from Japan.

The coastal waters of Korea are divided into three regions, the East Sea, the South Sea and the Yellow Sea, on the basis of the geographical distribution and the community coefficient.

Concerning the distribution in each region, 11 species occur in the East Sea, 39 species in the South Sea and 23 species in the Yellow Sea

The community coefficient between the South Sea and Yellow Sea(0.733) is higher than those of the South Sea-the East Sea (0.476) and the East Sea-the Yellow Sea(0.438).

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EXPLANATION OF PLATES 1-4

PLATE 1

a. *Dynamena cornicina* b. *Sertularella distans* c. *S. tongensis* d. *S. obtusa* e. *S. tenella* f. *S. pedrensis*

PLATE 2

a. *Sertularella gayi* b. *Abietinaria traski* c-d. *Sertulaia desmoides* e. *S. turbinata* f. *Thuiaria suensoni*

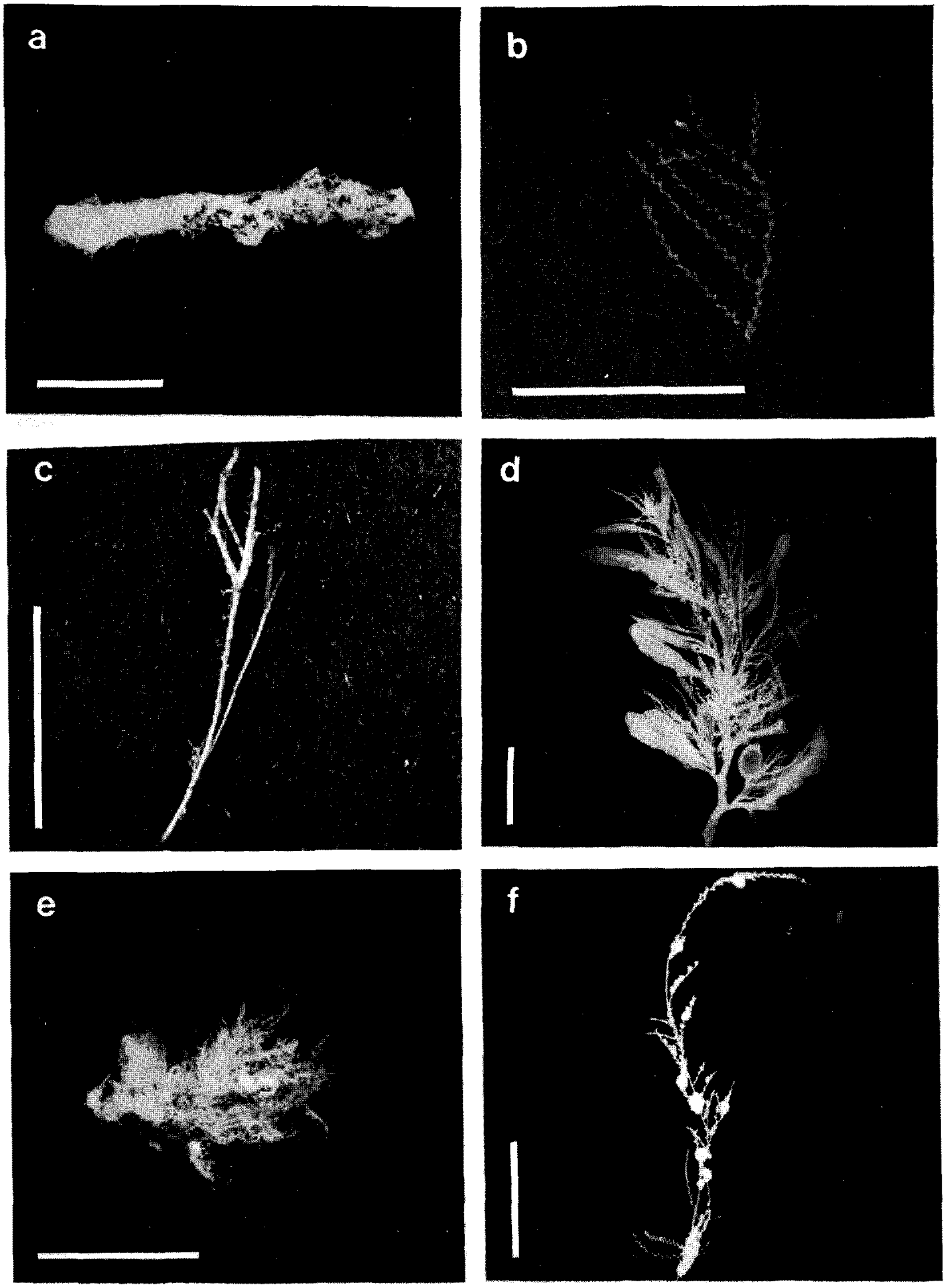
PLATE 3

a. *Thuiaria plumosa* b. *T. thuja* c. *T. similis* d. *T. articulata* e. *T. nuttingi* f. *T. carica*

PLATE 4

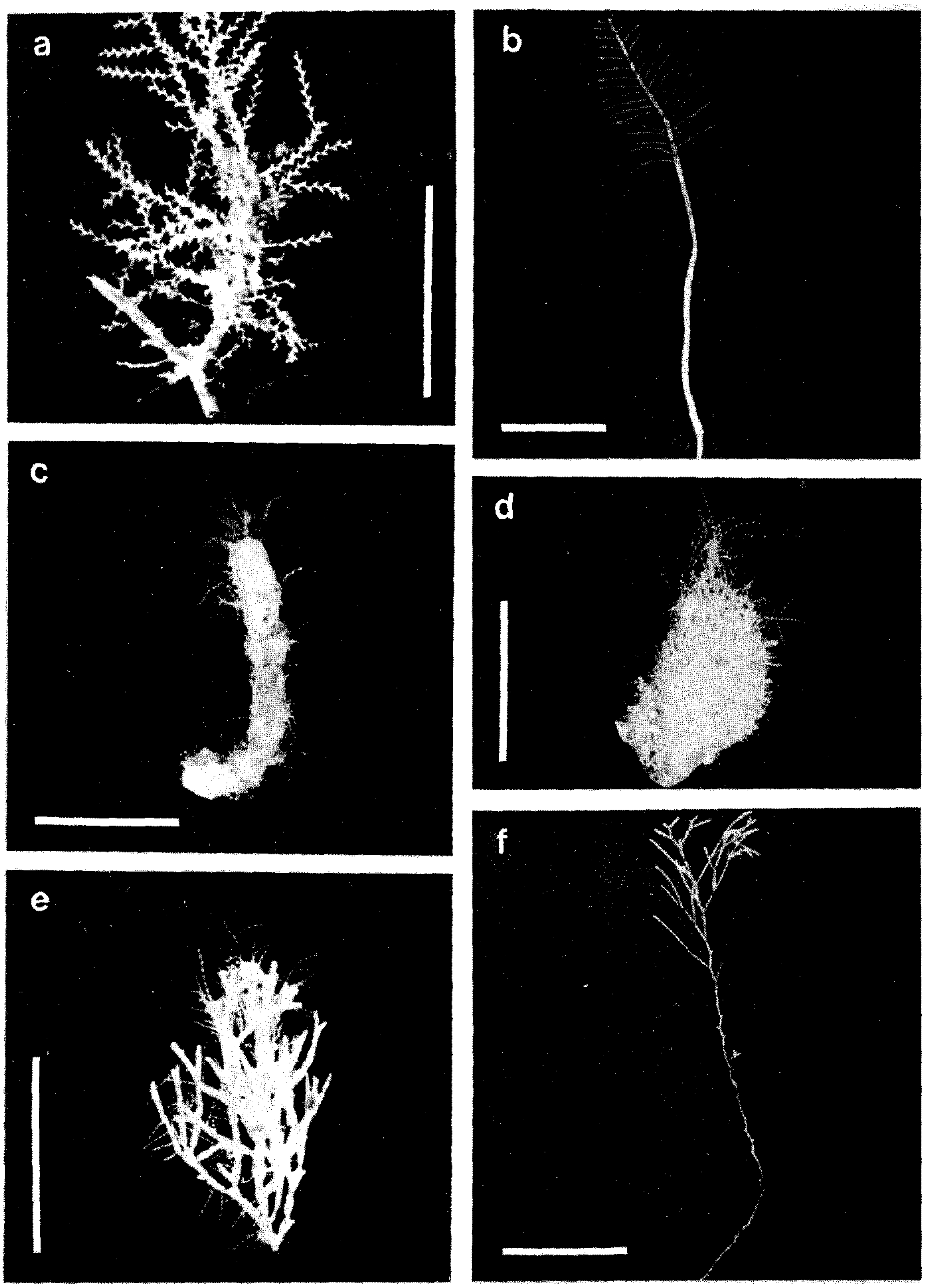
a. *Selaginopsis triserialis* b. *S. cornigera* c. *S. trilateralis* b. *S. pinnata*

PLATE 1



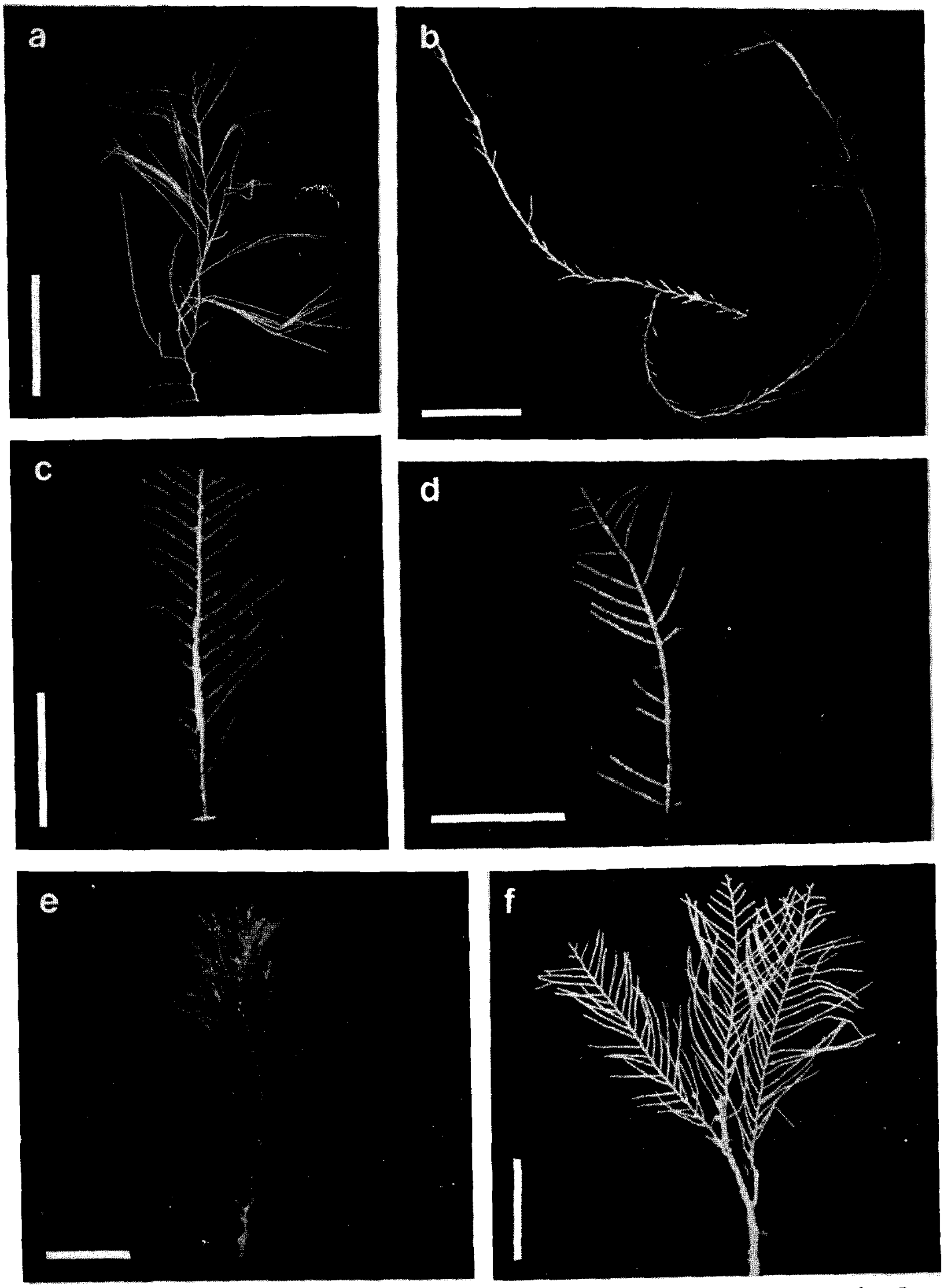
Each scale in 2cm

PLATE 2



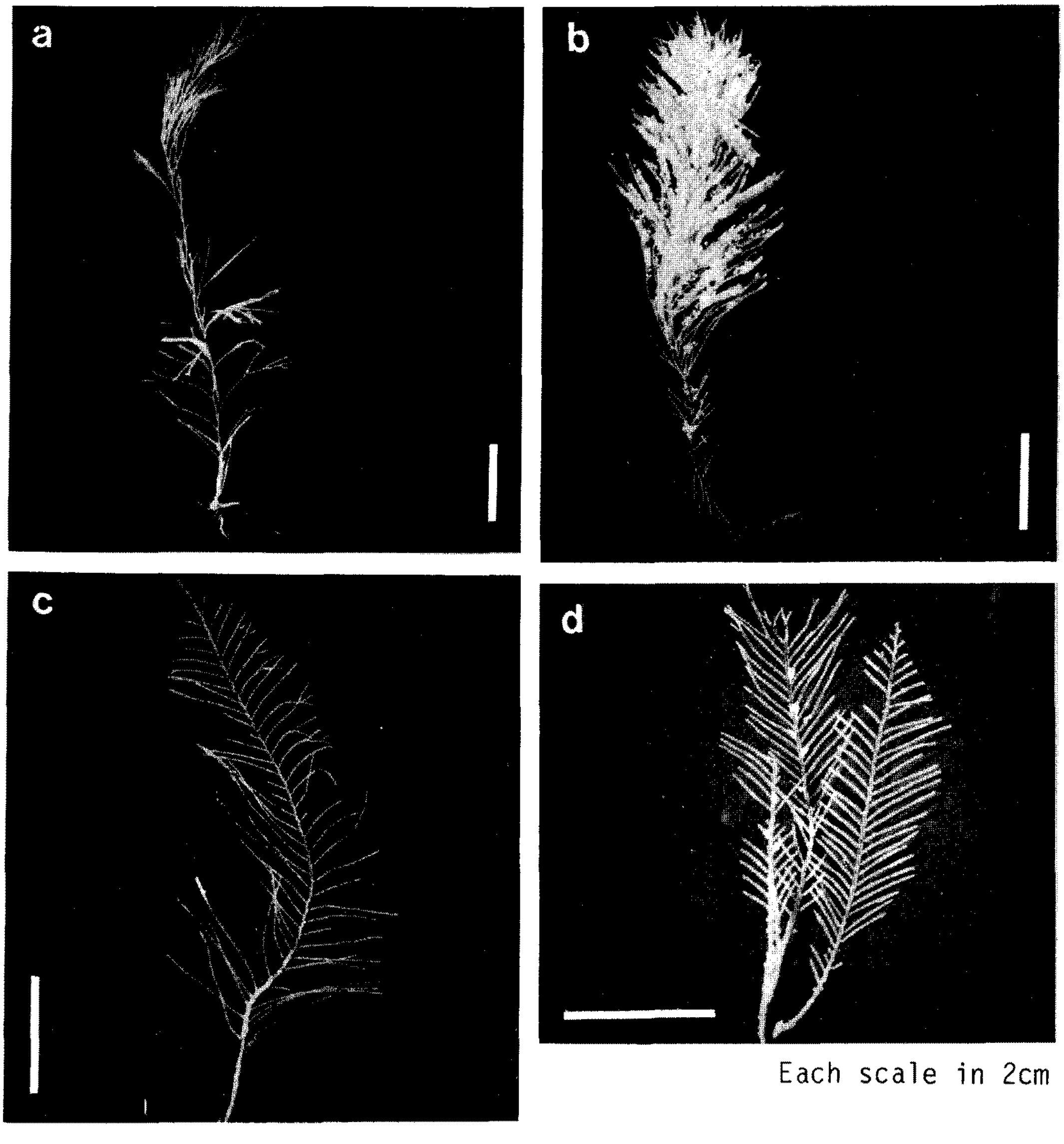
Each scale in 2cm

PLATE 3



Each scale in 2cm

PLATE 4



Each scale in 2cm